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Status of implementation of the information and communications technology strategy for the United Nations

Report of the Secretary-General

Summary

The efficacy of information and communications technology (ICT) at the United Nations continues to increase, at the same time as the responsibilities under United Nations mandates expand in response to continually changing and often unpredictable global events. The ICT strategy (A/69/517), which was endorsed by the General Assembly in 2014 in its resolution 69/262, was designed to support the United Nations in carrying out those expanding responsibilities and in delivering all of its multifaceted objectives, from desk to field and from a single staff member to Member States. The Secretary-General presents this second report on the progress of the ICT strategy, one year and a half into its implementation. The report addresses the recommendations and observations raised by the Advisory Committee on Administrative and Budgetary Questions and endorsed by the Assembly, as well as the subsequent decisions of the Assembly with respect to the Secretary-General's first progress report (A/70/364 and Corr.1). The present report provides a comprehensive update of the status of all key initiatives and commitments contained in the strategy, accompanied by an overview of the management of ICT globally and, as also requested by the Assembly, a full, updated, five-year budget projection.

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I. Introduction

1. The information and communications technology (ICT) strategy was undertaken to transform the technology environment at the United Nations over a period of five years (during the period 2014-2020). Under the strategy, ICT at the United Nations would undergo a programme of structured modernization and transformation so as to address the problems arising from the Organization's historically fragmented systems. The strategy would also ensure optimization of resources and rigorous governance measures, while, in due course, allowing space for innovation. The direction for ICT at the United Nations was therefore set in 2014 and progress in a number of areas over the first year of implementation was reported to the General Assembly at its seventieth session (A/70/364 and Corr.1).

2. The second year of implementation has seen additional achievements: the ICT infrastructure and architecture are running more smoothly with ongoing improvements in operations and delivery; further ICT policies are in place; critical support has been delivered for the deployment of the enterprise resource planning system, Umoja; systems are much more secure; the enterprise application help desk is fully established; and there has been positive and productive collaboration among departments, notably between the Office of Information and Communications Technology and the Department of Field Support. A number of cost optimization initiatives, including consolidation of ICT resources and rationalization of applications, are also being implemented. As a result of these initiatives, and of Umoja implementation, annual ICT costs (excluding the cost of Umoja) have been reduced by 1.74 per cent from 2014 to 2016, and investments have been more focused on strategic deliverables. In addition, the number of posts with functions related to ICT support has been reduced by 238 across the Organization.

3. Although the strategy has brought about these numerous achievements less than half way through implementation, challenges remain in certain critical functions. Consolidation of ICT resources as approved by the General Assembly in the context of the 2016-2017 programme budget has been implemented; however, progress on ICT harmonization has not precluded resistance to the consolidation of ICT resources in some areas and compliance with governance aspects continues to be limited. Despite ICT support having shifted to service delivery centres, resources remain local or departmental, and the development and establishment of a global ICT list of costs (rate card) remains a priority in the process of planning ICT resources for the 2018-2019 biennium. Furthermore, departments still need to ensure that the necessary security reviews of certain systems are conducted; not all staff have completed mandatory information security training; and information assets await classification to ensure that limited information security resources are directed effectively. Finally, capital investment in ICT in general, along with additional investment in cybersecurity, innovation and analytics, remains critical.

4. Notwithstanding these challenges, there has been steady progress in implementing the strategy as documented in the following sections of the present report. At the crux of all of the activities under the strategy has been the focus on customer experience and the benefits for ICT users. The United Nations continues to aim for excellence in end-to-end delivery of ICT solutions and services, with customer service satisfaction rates at 80 per cent for key support systems.

5. While work continues on achieving the objectives and vision laid out in the modernization and transformation agenda of the strategy in its first phase, now is the time to embed the second phase and to manoeuvre towards further innovation under a digital agenda. In detailing progress made on the strategy, the present report begins with an overview of implementation, including a financial impact summary (paras. 6-13), followed by an account of current governance measures (paras. 14-18) and updated information concerning the first phase (paras. 19-50). Concerning the second phase of implementation, the digital agenda is described in more detail (paras. 51-61), followed by updates on global sourcing and global assets management (paras. 62-72). A detailed analysis of ICT human resources is then provided (paras. 73-91), and lastly the report submits comprehensive information supporting the ICT five-year budget projection (paras. 92-124).

II. Overview of implementation and governance

A. Summary of implementation during the second year

6. The most critical components of the modernization and transformation agenda encompassed by the strategy are to create an up-to-date and innovative ICT environment to support the work of the United Nations; to continue to support ICT services in the field; and to ensure more efficient, effective and secure ICT operations and delivery across the Organization.

7. When the strategy was being developed, and before its subsequent endorsement by the General Assembly in 2014, the United Nations had 2,340 applications, 102 data centres and server rooms, hundreds of separate networks and over 130 help desks. At the time of preparation of the present report, there were 1,652 applications; 86 data centres and server rooms;[1] a single "One United Nations" network, connecting 594 United Nations locations; and a single unified help desk supporting enterprise applications (the Unite Service Desk). During the second year of implementation, in a collaboration between the Office of Information and Communications Technology, the Umoja project team, the Department of Field Support and other entities, considerable efforts have continued to be made to accomplish those achievements, as well as the other key priorities listed below:

(a) Support for the deployment and mainstreaming of Umoja;

(b) Improvements in information security;

(c) Deployment of the Exchange/Office 365 hybrid global infrastructure to consolidate e-mail;

(d) Implementation of a global infrastructure monitoring and support capacity;

(e) Harmonization and consolidation of departmental ICT resources, in particular the consolidation of data centres and the creation of one virtual data centre;

[1] Server rooms located in field missions are needed to ensure the reliable provision of ICT services, since most localities have no infrastructure of their own.

(f) Harmonization and standardization of global broadcasting and conferencing services at United Nations Headquarters and in the field;

(g) Coordination between the Office of Information and Communications Technology and the Department of Field Support on ICT strategic priorities for budget preparation, human resources, assets and assessment of contracts.

8. While implementing the strategy is moving forward in phase one, efforts are also being geared towards the second phase, which focuses on the digital agenda, innovative solutions and analytics, mainstreaming Umoja, building sustainable capacity of the Unite Service Desk, global sourcing and global asset management initiatives.

B. Financial impact summary

9. The estimated regular budget resources for the biennium 2016-2017 for ICT amount to $354.0 million. This represents a decrease of $14 million, or 3.9 per cent, compared with the biennium 2014-2015. The decrease is attributable to a number of factors, including implementation of the strategy and progress in consolidation and harmonization of ICT resources, implementation of Umoja and reductions in budgetary cost parameters.

10. To enable more consistent reporting concerning ICT resources, the cost estimates under the regular budget are now based on the costing of all posts that fall within the information and telecommunications technology job network as reflected in Umoja. Previously, estimates included only the full or partial costs of posts that, on the basis of the judgment of departments, were involved in information technology (thus excluding resources related to communications technology), as reflected in the foreword and introduction of the proposed programme budget for the biennium 2016-2017 (A/70/6 (Introduction)).

11. Peacekeeping mission budgets decreased by an estimated 1.02 per cent from the 2014-2015 biennium to the 2016-2017 biennium ($942.5 million to $932.9 million), while the support account for peacekeeping operations decreased by 1.67 per cent (from $59.9 million to $58.9 million). Comprehensive financial analysis is provided in the section on budget projections of the present report, together with an overview of ICT resources for the bienniums 2014-2015 and 2016-2017, including resources for Umoja (annex I).

12. The planning assumptions for 2018, 2019 and 2020 are focused on priority areas, activities and ongoing projects identified in the strategy, which require resources estimated at $1,425.1 million, representing a net increase of $52.3 million over the ICT resources for the 2016-2017 biennium. Within the existing 2016-2017 envelope of total resources of $1,372.8 million, cost optimization efforts and initiatives, with an estimated value of $76.4 million, have been identified against industry benchmarks. The Organization allocated 6.01 per cent of its resources to ICT programmes and activities during the 2016-2017 biennium, with broad variation across various sources of funding.[2] For comparison, the industry average

[2] Excludes extrabudgetary resources; if extrabudgetary resources are taken into account, only 3.41 per cent is allocated.

for ICT spending as a percentage of operating costs was approximately 9.2 per cent in 2015.

13. Reprogramming of optimized costs will assist in offsetting the cost of future investments, which are driven by the key issues that the Organization is facing in the areas of infrastructure and operations, as well as of maintenance and support activities, beyond the 2018-2019 biennium.

C. Compliance

14. In order to achieve the successes of the strategy to date, strong leadership has been critical. The Chief Information Technology Officer leads all ICT activities globally and has issued guidelines, established the balance between operational freedom and central control, and strengthened governance globally. The Secretary-General's Bulletin that defines the organization of the Office of Information and Communications Technology has been finalized, as have internal policies and procedures for formalizing designation and delegation of authority.

15. In addition, and in collaboration with ICT units across the Secretariat, the Office of Information and Communications Technology has developed and issued a comprehensive body of 38 policies that cover a range of ICT management topics, such as acceptable use, infrastructure, applications, asset and information management, and information security and governance, all of which ensure a standardized approach to the management of ICT resources across the Secretariat.

16. A compliance function to monitor, measure and report on policy implementation has also been instigated, which will hasten progress in tackling the challenges that remain, as noted in paragraph 3 above.

D. Project assurance and performance management

17. The Enterprise Project Management Office continues to ensure that the broad scope of ICT projects and performance are monitored effectively. Annex II provides updated details on the status of all projects, as requested by the General Assembly. These projects require adherence to established governance and discipline and are subject to risk management scrutiny in accordance with enterprise risk management principles. Any changes to projects are subject to review and approval.

18. There have been demonstrable improvements in the past year in relation to project assurance and performance management: quality assurance auditing of the monthly project status reports has increased; one-on-one training with project managers was instigated to ensure compliance; global project status meetings continue to be held, and the project management board meets every month to review project changes, critical risks and other issues. Table 1 illustrates the progress on mitigating the risks reported in the first year of implementation of the strategy.

Table 1
Progress in mitigating risks

Risk description	*Mitigation plan*	*Progress to day*
Inadequate ICT skill set to implement the strategy	Increased training and skills assessment	More staff have undertaken ICT training, spanning over 27 ICT courses. Skills assessment is ongoing. ICT workforce data have been confirmed with the Office of Human Resources Management and staff members will be assessed against the approved baseline
Decentralized procurement and lack of transparency of ICT contracts	Implementation of global sourcing and deployment of Umoja	Data on contracts are extracted from Umoja and analysed. The geospatial information services contract was executed on 25 July 2016. Requests for proposals are in progress and contracts are expected to be in place during the first quarter of 2017. Technical evaluation of proposals for wireless services has been finalized; contracts are expected to be in place by the end of 2016. By March 2017, other services related to voice and data will be provided globally
Continued fragmentation, limiting effective implementation of the strategy	Improved service delivery, implementation of delegation of authority and strengthening of governance, controls and monitoring tools	ICT guidelines for the implementation of the strategy were published in 2015 and 2016. Policies for the implementation of additional delegation of authority have been finalized
Change fatigue and resistance to change	Increased stakeholder engagement and outreach and improved service delivery metrics	Continued engagement has taken place between the Office of Information and Communications Technology and stakeholders. A United Nations-wide customer satisfaction survey was conducted, providing insights on what improvements are needed
Lack of information security awareness, leading to compromises of ICT systems, confidentiality and integrity of information	Monitoring of the completion rate of mandatory information security awareness training course and increased security threat communications	The completion rate of the mandatory training is monitored monthly. Staff are alerted regularly in response to security threats

Risk description	*Mitigation plan*	*Progress to day*
Lack of visibility of ICT assets	Implementation of asset monitoring and controls	Continuous physical verification is in progress. A solution for managing and registering intangible assets is being explored and business intelligence reports are being designed
Insufficient and fragmented funding relative to the increasing scale and complexity of ICT	Realization of efficiencies in ICT operations and reinvestment towards more strategic activities	Resource analysis is complete. Planning assumptions for estimated future resource requirements have been developed for global ICT activities

III. Modernization and transformation: update on key initiatives under phase one

A. Enterprise support: Umoja

19. A key ICT deliverable in relation to Umoja was the deployment support for clusters 3 and 4 through global network harmonization, integration access and production support. The mainstreaming of Umoja is ongoing, and since specific tasks and goals have been carefully scheduled, the project team meets every two weeks to ensure that the project is progressing as planned. Mainstreaming is also addressed at regular meetings with senior management to ensure escalation of critical risks and issues. Overall, long-term support of, and transfer of knowledge from, Umoja are the key areas of focus. The complete current status of the Umoja project is reflected in the eighth progress report of the Secretary-General on the enterprise resource planning project (A/71/390).

B. Trust and confidence: information security and disaster recovery

20. The implementation of the 10-point action plan to strengthen information security is progressing and stands at 65 per cent completion at the time of preparation of the present report in the face of some challenges (see para. 3 above). The following key milestones have been achieved:

(a) A computer-based information security awareness training course has been developed and deployed, together with a global outreach and information campaign;

(b) Policies and guidelines have been promulgated for key areas to ensure adequate and consistent protection of the Organization's ICT data and resources;

(c) Firewalls and systems to filter e-mail and Internet traffic have been upgraded in several locations to increase the level of protection and to harmonize the application of policies;

(d) Intrusion detection monitoring continues; however, expansion of the information security programme will require further investment.

21. The number of critical systems has been reduced from 171 to 24, aligning with best practices, and disaster recovery capabilities have been implemented for 60 per cent of these systems. However, establishing disaster recovery capabilities for large-scale enterprise systems is resource intensive and will require further investment for the remaining 40 per cent of systems requiring disaster recovery (previous investments increased the level of disaster recovery capacity at United Nations Headquarters, but the latest assessment reflects the needs of the Secretariat as a whole).

22. Looking ahead, the 10-point action plan is expected to transition to a long-term information security programme in 2017, in order to ensure a sustainable approach that builds on past accomplishments. The following objectives will be included in the information security programme:

(a) Outreach efforts will continue so as to provide updated information and improved training opportunities to all staff members and other authorized users to increase information security awareness;

(b) The managed intrusion-detection service will be maintained and broadened to cover areas that are not currently within its scope;

(c) The programme will be expanded to counter cyberattacks that have the potential to affect building management, physical security, public information and conference management systems, all of which are connected to the Internet;

(d) ICT assets and data will continue to be protected through the framework and through related governance mechanisms.

C. Shared platform: Enterprise Application Centres

23. In accordance with the application rationalization plans for 2016-2020, the Office of Information and Communications Technology proactively manages application development, consolidation, modernization and retirement through the coordinated governance of the Enterprise Application Centres. Since 2014, 2,340 applications have been reduced to 1,652 through planned consolidation and migration, and the goal is to further reduce the number of applications to 1,000 by the end of 2020.

24. The implementation of the Exchange/Office 365 hybrid project will consolidate all e-mail and messaging across the Secretariat into a unified platform; this will result in the retirement of 780 additional legacy systems. Details of the progress made in retiring applications (by missions, departments and offices — the business owners) are provided in table 2 and additional rationalization opportunities for the remaining 1,652 applications are presented in table 3.

Table 2
Progress in retirement of applications

Mission/department/office	*Number of applications*	*Support costs (United States dollars)*
Department of Peacekeeping Operations, Department of Field Support and peacekeeping and political missions supported by the Departments of Peacekeeping Operations and Field Support	253	2 030 940
United Nations Office at Vienna/United Nations Office on Drugs and Crime	84	146 175
International Criminal Tribunal for Rwanda	64	230 400
Economic Commission for Africa	44	142 370
United Nations Office at Nairobi	39	130 569
Office of Programme Planning, Budget and Accounts	24	164 172
Department for General Assembly and Conference Management	22	35 351
Economic and Social Commission for Asia and the Pacific	20	94 188
United Nations Office at Geneva	19	54 200
Office of Information and Communications Technology	17	918 796
Office of Central Support Services	13	124 040
Department of Economic and Social Affairs	12	3 000
Economic Commission for Latin America and the Caribbean	12	27 236
Office of Human Resources Management	11	1 370
Economic and Social Commission for Western Asia	9	35 900
Office for the Coordination of Humanitarian Affairs	9	62 670
Office of the United Nations High Commissioner for Human Rights	6	43 059
Office of Internal Oversight Services	5	82 667
Department of Political Affairs	4	2 111
Department of Public Information	4	940
Economic Commission for Europe	4	1 300
Office of the Under-Secretary-General, Department of Management	3	1 110
Office for Disarmament Affairs	3	840
Executive Office of the Secretary-General	2	470
International Tribunal for the Former Yugoslavia	2	20 000
Department of Safety and Security	1	370
Office of Legal Affairs	1	1 000
United Nations Conference on Trade and Development	1	1 000
Total	**688**	**4 356 244**

Table 3
Further rationalization of existing applications

Action for further rationalization	*Number of applications*
Maintain	476
Harmonize with common solutions	342
Consolidate with Umoja	262
Consolidate with Unite Docs	141
Consolidate with iNeed	73
Consolidate with Field Support Suite	69
Modernize	57
Consolidate with standard correspondence solution	50
Review	50
Consolidate with Cosmos	43
Consolidate with Inspira	39
Consolidate with Unite Connections	28
Retire with replacement	14
Retire without replacement	8
Total	**1 652**

25. A total of 454 applications were identified to be retired as a result of the deployment of Umoja as shown in table 4. From 2014 until the time of preparation of the present report, 194 applications were retired in the areas of finance and budget, human resources, supply chain and logistics, and support services. It is estimated that the full implementation of Umoja will support the consolidation of the remaining 260 applications.

Table 4
Applications retired as a result of the implementation of Umoja

Functional category	*Number of applications mapped to Umoja*	*Annual support costs, including staff costs (United States dollars)*	*Number of applications retired as a result of Umoja*	*Annual support cost for retired applications (including staff costs) (United States dollars)*
Enterprise resource planning, Secretariat (Integrated Management Information System (IMIS))	8	4 113 929	–	–
Finance and budget	113	3 455 493	64	2 222 861
Human resources	133	2 853 470	55	727 635
ICT operations	30	309 222	15	174 778
Programme management	6	372 875	2	18 885
Reports and analytics	38	967 246	5	47 662
Supply chain and logistics	97	2 115 536	34	881 070
Support services	29	274 747	19	91 607
Total	**454**	**14 462 518**	**194**	**4 164 497**

Enterprise solutions

26. The Enterprise Application Centres in New York, Vienna and Bangkok are responsible for the development of innovative enterprise solutions to support the effective delivery of United Nations mandates. Enterprise systems will increasingly replace multiple localized legacy systems that are used to automate manual work and processes, manage information and support decision-making. Enhanced integration across enterprise systems will also simplify training and improve the overall user experience. By using standard, centrally hosted systems, the Organization will be able to provide improved, more consistent and more reliable user support, performance, security and business continuity. New standard applications have been delivered in the areas described below.

Modern administrative and collaborative solutions

27. The Office of Information and Communications Technology continues to deliver administrative support systems that complement Umoja. Inspira, the standard United Nations talent management solution, has been enhanced to include features and functionalities to support the administration of the mobility programme, post management and reference checking, and to provide secure mobile access to Inspira. The Unite Docs and Unite Connections platforms have replaced hundreds of local document repositories, databases and shared drives with standard, enterprise-class solutions that facilitate information sharing and collaboration in a secure environment. The number of Unite Connections users has grown from 7,000 in 2015 to over 20,000 in 2016. Over 3,600 people are using Unite Docs and have uploaded more than 2.5 million files onto this platform. The Office of Information and Communications Technology is working closely with the Archives and Records Management Section of the Office of Central Support Services to continue to facilitate and improve records management across the Organization.

Workflow systems

28. The automation, tracking and performance management of service delivery is critical to both management reform and the optimization of support services. Unite iNeed is the standard enterprise workflow and service management platform used across various departments to expedite and monitor service delivery in areas such as human resources entitlements, the Unite Service Desk and facilities support requests, as well as for ICT operations management. This has resulted in previously unachievable visibility and insight into support and service management performance.

Solutions to support the work of the United Nations

29. Enterprise systems are increasingly being used to support the substantive work of the Organization in a variety of critical areas, including drug trafficking and money-laundering prevention, financial intelligence, conference management support and learning management. For example, the goAML application (https://goaml.unodc.org) enables strategic responses to crime, including money-laundering and terrorist financing. The goAML application is used by financial intelligence units of Member States, which have the responsibility to receive, process and analyse reports required from financial institutions or persons documented in national anti-money-laundering legislation. The goAML application is currently being used to counter terrorist financing and money-laundering in the jurisdictions of 27 Member States and is being introduced in an additional 25 countries.

30. The Office of Information and Communications Technology continues to harmonize e-learning platforms across the Organization. The global e-learning platform is designed to deliver up-to-date learning content for capacity-building, targeted at Member State officials. Hundreds of training modules (projected to reach 400 modules by 2017) have been developed in collaboration with international experts, covering issues relating to border control, forensics and laboratories, controlled deliveries, security and travel documents, intelligence, HIV and AIDS, and human rights. These modules have been delivered to law enforcement officials worldwide, reaching 12,000 end users, and are available in 12 languages. In addition to the online courses, 14 operational mobile training units delivering e-learning courses have been deployed to border law enforcement officials operating in remote areas with limited or non-existent Internet connection (land border, sea and island locations).

31. The substantive learning management platform consolidates numerous online learning sites and offers thematic online courses available to the public. This platform is currently delivering 1,200 courses in multiple languages, serving 70,000 learners from more than 100 countries. A suite of standardized systems has also been delivered for meetings and conference management (including support functions and remote conferences), document planning and production, publications management and computer-aided and machine translation. These tools are used to facilitate the work of the Department for General Assembly and Conference Management and they support over 3,400 personnel in New York, Geneva, Vienna and Nairobi, as well as at the locations of the regional commissions.

32. In addition, the United Nations Official Document System has been upgraded, including a new look and feel, to offer many new features available on a wide range of mobile devices, enhanced searching capabilities and enhanced downloading. This outcome was the result of collaboration among the Office of Information and Communications Technology, the Department for General Assembly and Conference Management and the Department of Public Information.

Field systems

33. Field operations are conducted in environments with limited commercial and local telecommunications and Internet services. The Office of Information and Communications Technology has, in cooperation and collaboration with the Department of Field Support and the Department of Peacekeeping Operations, delivered enterprise solutions to support key substantive and support areas. Examples of critical systems deployed to field operations include:

(a) Electronic management of contingent-owned equipment (eCOE), which automates the inspection of contingent-owned equipment, consequently increasing billing accuracy and accelerating payment to troop-contributing countries;

(b) Electronic fuel management (EFMS2), which provides full transparency across fuel supply chain operations, monitors consumption and helps to detect misappropriation of fuel. The use of EFMS2 has resulted in savings estimated at $3 million a year as a result of faster data analysis and prompt-payment discounts, as well as reduction in operational costs and fuel consumption due to stronger controls over fuel issuance.

34. The Field Support Suite streamlines, standardizes and automates field-specific administrative and operational tasks common to most missions. Field Support Suite modules are designed to work together and to interface with other enterprise systems, such as Umoja, so as to facilitate service delivery across all field missions. The newest modules of the Suite comprise the aviation information management system, which streamlines data collection and core business processes in connection with air operations at the mission level. The system comprises a centralized database shared by New York, Brindisi, Italy, and field missions.

35. Additional functionalities have been added to the aviation information management system, such as basic crew management functionalities, real-time visibility of expenditure, including distribution of insurance costs, visualization of air operations on maps and automatic analysis of flight hours, thus enhancing essential support tools for air operations. The system is currently deployed in 23 field missions worldwide.

D. "One United Nations" network: global wide-area network

36. The legacy wide-area network has been successfully replaced with a network infrastructure interconnecting offices based on a framework designed to ensure consistency, reliability and secure service delivery (including the ongoing delivery of Umoja clusters). Analysis of data from 594 links, across 41 different entities in 272 locations, resulted in a joint project led by the Chief Information Technology Officer to establish the global wide-area network, the "One United Nations" network, by merging established systems of the Office of Information and Communications Technology and the Department of Field Support. The "One United Nations" network will allow for a centralized monitoring function, support infrastructure and further facilitate standardization. It is expected that the network will be completed by December 2017.

E. Regional delivery model: Regional Technology Centres

37. The Regional Technology Centres, which were established in May 2015, continue to exercise oversight over Secretariat entities on issues covering information security, governance and risk, compliance with ICT policies and the delivery of technological solutions regionally. To date, the Centres have achieved the following objectives:

(a) Consolidation of the service desk functions into five Unite Service Desk hubs;

(b) Consolidation of all leased lines and disparate networks into the "One United Nations" network;

(c) A 16 per cent decrease in the number of data centres and server rooms globally;

(d) Consolidation of storage area network devices, with a 20 per cent decrease in the number of storage systems worldwide;

(e) Promulgation of information security policies and implementation of the 10-point action plan in the regions.

38. The Regional Technology Centres complement the regional ICT framework of the Department of Field Support, which facilitates oversight by the Department on the delivery of ICT services in peacekeeping missions to civilian and uniformed personnel and other co-located partners, through three regional ICT services spanning 35 entities. The annual workplans for the regional ICT framework promulgates Department- and region-specific strategies; these workplans also reflect the ICT strategy and region-specific goals. The workplan for 2016-2017 for the Regional Technology Centres is designed to stabilize and optimize ICT operations (i.e. to achieve a global consolidation of ICT services and infrastructure), thus further strengthening information security and preparing the infrastructure to support a more mobile workforce.

F. Global monitoring: Enterprise Network Operations Centre

39. The Enterprise Network Operations Centre, established in 2015, continues to monitor all networks and data centre operations, creating much needed visibility and improving uptime, performance and security. As the "One United Nations" network develops, a holistic approach can also be adopted for monitoring. It is expected that the monitoring solution run by the Office of Information and Communications Technology will be consolidated with the Network Control Centre operated by the Department of Field Support by the end of 2017.

G. Hosting and connectivity: Enterprise Data Centres

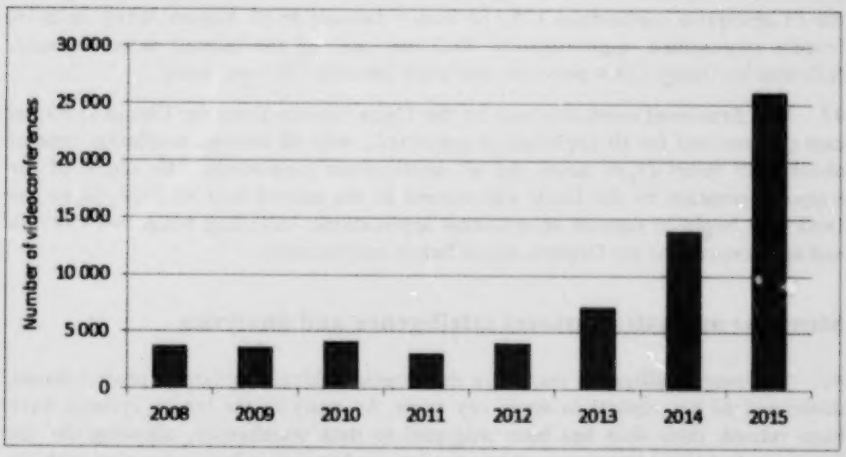
40. The Enterprise Data Centres continue to deliver services in the areas of hosting, connectivity and monitoring. Major systems have been strengthened and moved to the Centres, such as Umoja, iNeed, domain name services, directory services, Unite Identity, Exchange/Office 365 hybrid, e-mail security gateways, shared database farms, Unite Docs, Unite Connections, EarthMed, Cosmos, COMET and the Field Support Suite. The implementation of applications out of the Centres takes full advantage of the 24/7 operations already in place at these Centres, guaranteeing global service in all time zones.

41. Several of the critical applications that have been migrated to the Enterprise Data Centres have disaster recovery facilities, and therefore greater resilience, and further reductions in locally hosted infrastructure are being made as a result of the migration of servers to the Centres, leading to reduced investment on equipment in local data centres. An increased level of protection is also provided through the application of common information security policies to all hosted applications. The unified e-mail gateways now allow for equal treatment of all incoming and outgoing e-mail from the Internet for all duty stations, overcoming the disparity in previously used anti-spam/virus/malware solutions.

H. Better tools: global engineering and conferencing

42. In order to deliver seamless videoconferencing, a technical procedure for operations, standards and support has been developed and implemented throughout the Organization. Recent analysis has indicated the significant reliance of the Secretariat on videoconferencing and revealed that the use of ICT conference management systems has increased by 100 per cent each year since 2008, as illustrated in figure I. Efficient ICT conference management systems help to control travel costs and lost productivity (lessening the time spent travelling), but further investment needs to be considered for the Organization to continue to meet demand while the use of videoconferencing continues to increase at the current rate.

Figure I
Use of information and communications technology conference management systems



43. In the meantime, other projects to enhance global engineering and conferencing are under way, such as unified communication; a videoconferencing booking and management system; global networking and monitoring; internal cloud videoconference bridging; and operations management. While services will benefit users during the integration of the broadcasting and conferencing services, all of these infrastructure projects will be integrated by the end of 2017.

44. A recent assessment of audiovisual and multimedia facilities and associated infrastructure has shown that the infrastructure needs significant updating and investment and United Nations equipment needs to be upgraded. Most of the audiovisual and multimedia equipment was purchased during the capital master plan project and is due for replacement, because many items have exceeded their useful economic lives. The actual percentage of assets to be replaced will be determined by an analysis to assess the risks of maintaining certain categories of assets beyond their useful life. Detailed asset information is provided below and asset replacement will be included in the proposed programme budget for the biennium 2018-2019.

I. Client-centric service: Unite Service Desk

45. The Unite Service Desk first became operational in Bangkok in September 2014, followed by Nairobi, Geneva, New York and Brindisi. The five hubs serve as the single point of contact for service requests, problems or inquiries for all key enterprise ICT applications. The five hubs have achieved the primary objective of providing 24/7 global support to United Nations personnel worldwide, irrespective of time and place.

46. The General Assembly endorsed the recommendation of the Advisory Committee on Administrative and Budgetary Questions that a unified system for Umoja support should be established (A/70/7/Add.18, para. 36). Efforts to move towards a single support model therefore began after Umoja cluster 4 had been completed in March 2016. Since February 2016, the United Service Desk has been working with the Umoja team and the Department of Field Support to review the production support model. Since 2015, the Desk has handled some 179,188 tickets for 13 enterprise applications (75,510 from 1 January to 31 August 2016). In 2016, Inspira represented approximately 47.2 per cent of the overall ticket volume, followed by Umoja (24.4 per cent) and Unite Identity (19.3 per cent).

47. The first-level resolution rate by the Unite Service Desk for Umoja is 55 per cent (73 per cent for all applications supported), with an average resolution time of about 4.89 hours (4.36 hours for all applications supported). The scope of the support operation by the Desk will expand in the second half of 2016, when the Desk will begin to support several new applications, including Microsoft Outlook and applications for the Department of Safety and Security.

J. Strategic analysis: business intelligence and analytics

48. Business intelligence teams are developing critical regulatory, project-based, donor and ad hoc reports in many key areas. As many of the legacy systems have been retired, their data has been migrated to data warehouses, allowing for the integration of historical data and data mining, and therefore better decision-making. The Office of Information and Communications Technology has also established business intelligence governance mechanisms covering infrastructure, as well as data and the visualisation of data to support decision-making.

49. Timely access to accurate information continues to be a major benefit from the implementation of Umoja, and the coordination of reporting for the supply of business intelligence has been mainstreamed into the Office of Information and Communications Technology. The data architecture and the business intelligence support functions will be mainstreamed in 2017 through the transfer of staff, with the relevant and critical skills and knowledge, from Umoja to the Office.

50. In addition, so as to support informed, fact-based decision-making and strategic planning, significant progress has been made in the area of analytics. Solutions supporting finance, human resources, supply chain and conference management have been provided. Solutions supporting the work of the United Nations in the areas of climate, land, water and energy, and gender parity have also been delivered.

IV. Innovation: a digital agenda for the United Nations (phase two of the strategy)

51. The digital agenda is presented as a holistic programme designed to leverage technology so as to strengthen the Organization and facilitate the work of the United Nations in the areas of peace and security, human rights, the rule of law, social and economic development and humanitarian assistance and in all environmental efforts.

A. Vision of the digital future for the United Nations

52. Modern life is, to an increasing extent, managed digitally, and life at the United Nations is no different; as a globally representative institution, the Organization has the opportunity to align itself with the growth of technologies. Building on recent and ongoing accomplishments under the strategy, there is a solid springboard to take forward a digital agenda for the United Nations. A coherent set of innovative technologies are presented to support organizational priorities as part of a vision of the digital future of the United Nations, as follows:

(a) Mobile solutions will be implemented that allow off-site personnel to access information, moving away from traditional desk-based computing, where possible and feasible;

(b) New technologies will be implemented to address the range of complex threats to the United Nations and its information, people and assets;

(c) Applications to strengthen the security of United Nations personnel and assets globally will be pursued to allow location-based provision of relevant security information, broadcast of alerts, tracking and monitoring of staff locations and receipt of staff responses during a crisis;

(d) Mobile-enabled applications to support data collection in the context of human rights, humanitarian affairs and peace and security will also be explored and solutions developed, combining analytics, data and geographic information technologies;

(e) ICT solutions that are being developed to provide capability to manage digital rights for documents will be critical, and programmes related to the encryption of voice and other forms of communication will be explored as part of ongoing efforts to strengthen information security;

(f) ICT solutions will also be developed to enhance support of conferencing in order to allow staff members to engage globally in real time and collaborate faster than has been possible before;

(g) Efforts will continue towards ensuring that the Organization is resilient.

B. Digital solutions for global challenges

53. In order to move forward with the digital agenda, the Office of Information and Communications Technology is actively expanding its work on developing innovative technology. Significant progress has been made, particularly in the

development of tools to inform policy decisions among Member States, enabling a multidimensional analysis of development based on economic, social and environmental factors. These tools are used to assess the impact of alternative development policies on the economy, including employment, sector output, gender data, and consumption, among other things, examples of which are outlined below.

Gender statistics portal

54. Gender parity is critical in many of the mandates of the United Nations and the collection and use of sex- and age-disaggregated data is critical for the implementation of gender markers throughout country-level activities. The gender statistics portal uses 52 quantitative indicators and 11 qualitative indicators covering national norms and laws on gender equality. The indicators are to be used as a guide for the national production and international compilation of gender statistics.

Situational awareness: global political news monitor and diplomatic pulse

55. Part of the mandate of the Secretariat is to facilitate diplomatic dialogue between Member States. The initiative on digital diplomacy seeks to modernize the way in which the United Nations conducts its work through the use of technology. As part of this initiative, the Office of Information and Communications Technology is collaborating on a tool called "diplomatic pulse" to help monitor official online governmental sources of information, such as websites, blogs and public social networks.

Energy access: electrification modelling tool

56. The electrification modelling tool using open geospatial data simulates the provision of universal access to electricity in 44 African countries. The model estimates the total cost of achieving universal access to electricity and provides a first insight into energy planning that accounts for local characteristics and several technology options.

Global climate, land, energy and water strategies

57. An integrated assessment tool is being developed to help analyse the interplay of land-use models, water resource models and energy systems models. It iterates the results from various models until convergence is achieved and creates a framework to assess policy decisions on issues such as promotion of renewable energy, preservation of biodiversity, agricultural expansion and control of emissions.

Common operating vision

58. Some parts of the United Nations and its agencies, funds and programmes have established various means to leverage technology to support operational awareness. Programmes that support operational awareness are required to meet demand and will be implemented in a manner that adopts a cohesive and connected approach.

Security in a digital society

59. The Office of Information and Communications Technology is leading efforts to build capacity, strengthen coordination and foster collaboration to enhance cybersecurity preparedness, resilience and response. The programme serves as a common platform for rapid information exchange and better coordination of protective and defensive measures against cyberthreats to the United Nations and aligns the Organization's cyberoperations and cybersecurity policy, frameworks and legal activities. The programme will support the efforts of the United Nations in the areas of peace and security, sustainable development, international law, human rights and humanitarian affairs though coordinated policy development, monitoring, response and mitigation strategies.

C. Infrastructure and cloud computing

60. Cloud computing in conjunction with mobile technologies will revolutionize the way in which the goals of the United Nations are met. As harmonization increases under the strategy, a portion of services will be shifted to the cloud to improve efficiency of delivery. The business model to deliver information technology services (software, platform and infrastructure) presents an opportunity to address critical ICT issues, including increased cost efficiency and business agility through speed, flexibility and scalability. In addition, there are benefits that support and accelerate existing ICT initiatives including data centre consolidation, shared services and sustainability.

D. Open administration: security, standards and interoperability

61. It is critically important that standardization and interoperability are embedded into ICT at the United Nations. Open administration demands a trustworthy and secure digital space in the face of cyber-risks. To support the concept of open administration, the United Nations is implementing technology that preserves the integrity of content throughout its lifespan, ensuring that a balance between confidentiality and availability is achieved. Technology programmes are being implemented and will be built on the classification of information and policies related to privacy. The objective is to ensure that openness of data, interoperability and access are achieved in a manner that does not compromise the security of information.

V. Optimization: global sourcing and global assets management

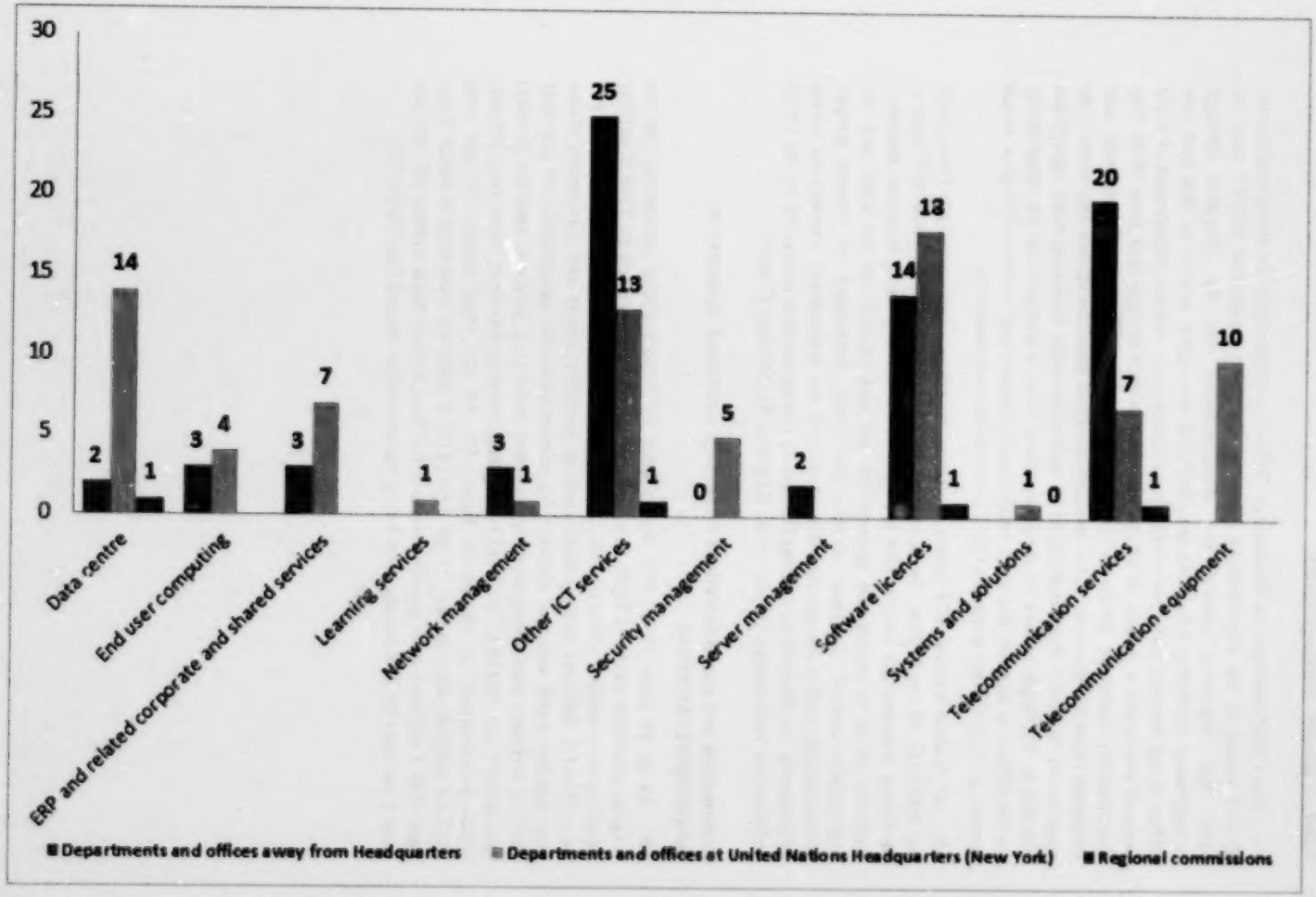
A. Global sourcing

62. Most vendors to the United Nations (excluding Umoja-related contracts) provide services in multiple locations managed by various offices independently. The Organization negotiates discounts in the areas of infrastructure, externally acquired licences and related ICT services such as application development and maintenance services. Areas such as voice, data and hosting cloud services are

currently subject to value engineering methodologies to save costs by renegotiating contracts, integrating and collaborating among different technologies, rationalizing wireless service providers and benchmarking existing rates and services against comparable organizations. There is potential to implement global sourcing through the consistent and effective use of systems contracts and enterprise agreements.

63. Performance-based contracts are associated with a multi-tier management structure so as to allow the proper control and ownership of global, regional and local contracts. A central structure or unit would manage global contracts and establish governance, made up of United Nations Headquarters staff and representatives from offices away from Headquarters and other participating entities. Regional contract groups would handle contracts that would not be used outside of a defined scope and area. Finally, local contract groups would handle only site-specific needs. A detailed proposal in this regard will therefore be developed and submitted in the context of the proposed programme budget for the biennium 2018-2019. In the meantime, figure II provides an overview of ICT contracts managed by various offices.

Figure II
Overview of contracts related to information and communications technology



B. Global assets management

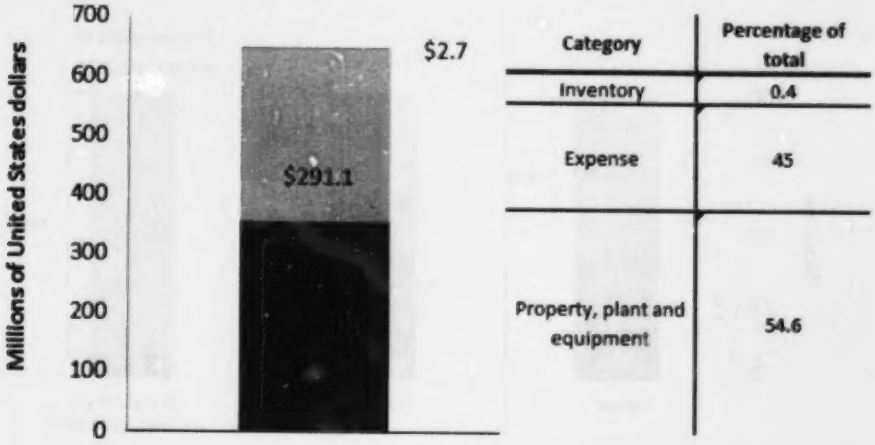
64. The Chief Information Technology Officer is responsible for the acquisition of all ICT assets in the Organization (General Assembly resolution 69/262, sect. II, para. 16). Improved control and accountability can be provided through strengthened visibility into both tangible and intangible assets; to that end, the Office of Information and Communications Technology and the Department of Field Support undertook a review of assets and acquisitions in May and June 2016. The Organization currently procures and maintains both annual subscriptions and perpetual licences; however, it has become apparent from the review that there is an opportunity to move from individual to enterprise-wide licensing with significant benefits to the Organization. In the near future, Umoja will provide the opportunity for the Office to monitor physical, intellectual property and software licences which constitute a significant portion of ICT investments and resources.

65. All United Nations ICT assets are being monitored and controlled throughout the lifecycle of each item, from receipt to disposal. For intangible ICT assets, including licences, the verification is conducted frequently using business analytics methods so as to ensure the appropriate use and custody of the asset and the appropriate control systems. Assets are being monitored to ensure proper accountability and to ensure that related records are maintained. Appropriate levels of authority for physical and intangible assets management is delegated by the Chief Information Technology Officer to the Regional Technology Centres.

Information and communications technology assets and inventory in peacekeeping operations

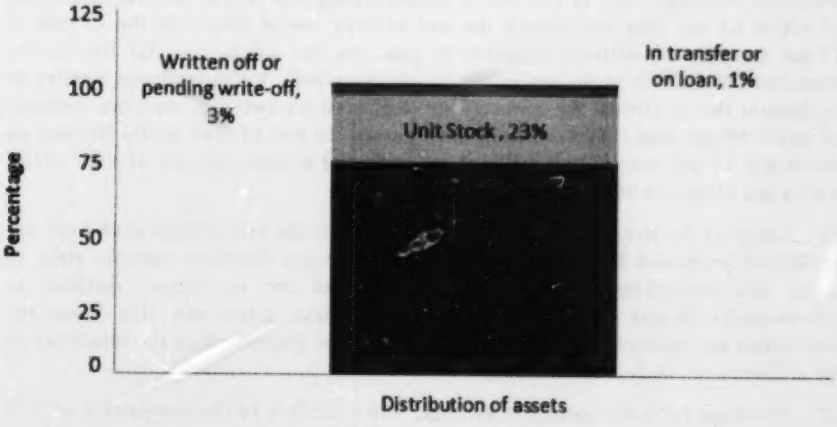
66. As at 30 June 2015, ICT assets held by peacekeeping operations had an original purchase value of $648.1 million, which had depreciated by $286.8 million resulting in a residual value of $361.2 million at 1 July 2016. Of these assets, 55 per cent ($354.2 million) were categorized as property, plant and equipment items (e.g. satellite earth stations, shelters for communications equipment), 45 per cent ($291.1 million) were categorized as expense items (e.g. printers, satellite phones) and under 1 per cent ($2.7 million) were categorized as inventory items (e.g. HF and VHF transceivers) as shown in figure III. Of the total assets, 73 per cent ($474.5 million) were in use, 23 per cent ($147.6 million) were held in stock, 3 per cent ($20.3 million) were pending write-off or had already been written off, and just over 1 per cent ($5.7 million) were being transferred or loaned (see figure IV).

Figure III
Classification of Department of Field Support information and communications technology assets as at 30 June 2015



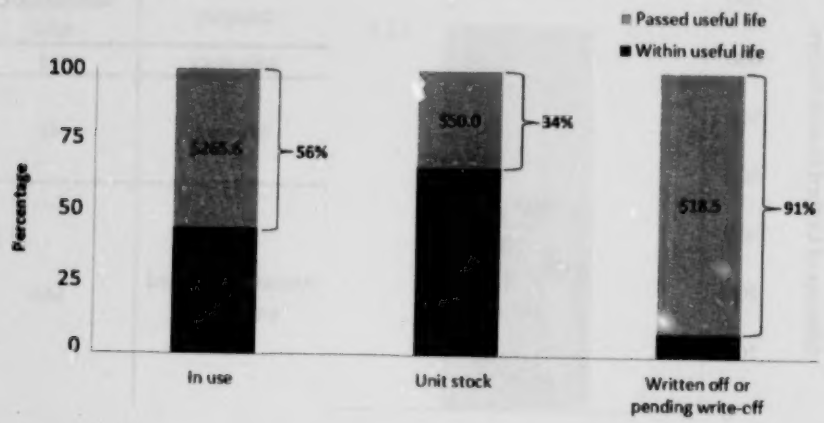
Category	Percentage of total
Inventory	0.4
Expense	45
Property, plant and equipment	54.6

Figure IV
Status of Department of Field Support information and communications technology assets as at 30 June 2015



67. Of the assets that were in use, 56 per cent ($265.6 million) had passed the end of their useful life; 34 per cent ($50.0 million) of the items in unit stock had passed the end of their useful life (figure V). Assets that have passed the end of their useful life and are categorized as in unit stock are generally held to provide spare parts for assets that are currently in use but for which there are no replacement alternatives. Due to delays in the lead time to receive asset replacements, assets that have passed the end of their useful life are often also kept as interim operational replacements, for immediate use.

Figure V
Status of useful life of Department of Field Support information and communications technology assets as at 30 June 2015
(Millions of United States dollars)



68. Peacekeeping missions continue to operate with ageing equipment and, if these trends continue, there is a potential for mission mandates to be compromised. For example, as at 30 June 2015, $39.9 million worth of computer notebooks and computer desktops were in use across peacekeeping and special political missions, of which 63 per cent had passed the end of their useful life, with the remaining 37 per cent ($14.6 million) expected to pass the end of their useful life by the biennium 2019-2020 if no replacements are provided. A similar trend applies to equipment that is critical for connectivity (e.g. network switches, network routers), of which 69 per cent ($80.3 million) have passed the end of their useful life and an additional 31 per cent ($30.0 million) are expected to pass the end of their useful life by the biennium 2019-2020.

69. Many of the items that have passed or will pass the end of their useful life are no longer supported by their manufacturers; there are therefore security risks in using this equipment, especially when products are no longer resilient to cybersecurity threats. The non-replacement of these assets can also lower the confidence and productivity of all personnel, who are dependent on the reliability of the ICT services in the field.

70. Missions have allocated, on average, $59.6 million to the acquisition of ICT equipment over the past three budget years. This is approximately five times less than the amount required to replace all the assets that have passed the end of their useful life. The cost to replace all the items that have passed the end of their useful life is $316.1 million.

71. The Department of Field Support will develop a risk assessment framework against centrally defined parameters, which will facilitate a holistic review of the exposure to risk and impact on operations should no replacements be provided. This framework will then facilitate the creation of a strategy for replacement of ICT

assets, which will prioritize the replacement of high-end, mission-critical equipment associated with the delivery of core ICT services, and subsequently set out an all-inclusive asset replacement strategy. The results of this analysis may also lead to requests for modifications in the approved asset life-cycle policy for certain types of equipment (e.g. change the useful life of desktop computers from four years to five years) that would take into consideration the potential impact on the delivery of critical services.

Information and communications technology assets and inventory in non-peacekeeping entities

72. The updated data on capitalized ICT assets with a depreciation schedule and a projection for the end of the useful life period is provided in annex III. The capitalized assets value[3] will decrease from $141.7 million to $2.4 million by the end of 2019. It is also projected that the inventory of ICT equipment owned by non-peacekeeping entities will decrease from $114.3 million to $0.2 million by the end of 2019.

VI. Our people: human resources for information and communications technology

A. Defragmentation

73. During 2015 and 2016, the Office of Information and Communications Technology fully integrated the Broadcast and Conference Support Service (formerly of the Office of Central Support Services) and partially integrated the Human Resources Information Services Section (in the Office of Human Resources Management) and the Financial Information Operations Service (in the Office of Programme Planning, Budget and Accounts) within the Department of Management. Responsibilities for the programme of work and financial and human resources of these offices have therefore been assumed by the Chief Information Technology Officer. Ongoing consolidation with respect to the Department of General Assembly and Conference Management, the Department of Safety and Security and the remaining offices in the Department of Management will allow further integration of ICT posts.

B. Careers in information and communications technology at the United Nations

74. United Nations staff perform core and managerial functions where access to sensitive and confidential information is limited and where it can be managed only with internal resources of the Organization. While the emphasis is on building national capacity, the recruitment of National Professional Officers and General Service staff is subject to the same criteria as that of international staff even in countries emerging from prolonged conflict where conditions have not allowed

[3] Calculations are based on the value of assets reported at the end of 2015. Depreciation is applied based on the useful life of each asset and an assumption that no item will be replaced.

them to meet those criteria. The Office of Information and Communications Technology and the Department of Field Support are in the process of reviewing profiles of staff and personnel across the ICT entities in the Secretariat and will work with the Office of Human Resources Management to introduce a sufficient level of flexibility in staff management within the Organization's overall human resources strategy.

75. The Office of Information and Communications Technology and the Department of Field Support are establishing a group of international posts of a specialized ICT nature with limited managerial responsibilities. Classification of these posts with an emphasis on technical functions will allow staff to apply, and be considered, for a pool of positions where the assessment of candidates will be based on their relevant technical expertise and experience, academic education and training resulting in professional certification and licensing. Knowledge and expertise in highly technical fields, such as IT forensics, geospatial information services, cybersecurity, cloud computing, systems architecture and complex architecture takes years to build, and therefore retaining skilled and talented entry and middle level technical experts can be achieved by creating opportunities for staff to progress within their job network following a technical career path, as opposed to a managerial career path.

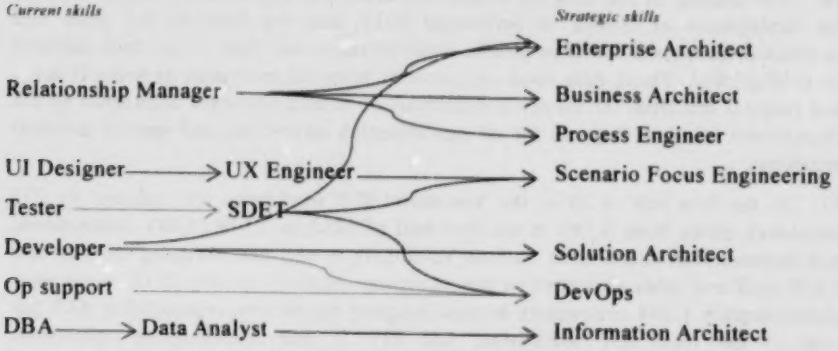
76. Progress in technologies and transition to cloud services are making an impact on a variety of ICT positions and on the nature of the skills required to perform new functions successfully. For example, the transformation of skills as listed below will be required:[4]

Traditional	*Transformed*
Data centre	Bring your own device (BYOD)[5] specialists
System integrator expertise	Cloud architect
Solution manager	Process engineer
Data analyst	Data scientist
Tester	Development operations

[4] Based on information taken from microsoft.com.

[5] The practice of allowing the employees of an organization to use their own computers, smartphones or other devices for work purposes.

77. The evolution of skills in the industry suggests that the following strategic skills[6] need to be built by ICT entities through training and skills upgrades:



Source: Microsoft.com.

Abbreviations: UI, User Interface; UX, User Experience; SDET, Software Design Engineer, Testing; OP, Operations; DevOps, Development Operations; and DBA Database Administrator.

78. Staff in the General Service and related categories represent more than 50 per cent of the ICT workforce. Many members of staff in these categories carry out functions that are technical and substantive in nature, and it is important to provide wider career opportunities for them. It is noted that the Secretary-General is proposing measures that will enhance career development opportunities for staff in the General Service and related categories in his report to the General Assembly at its current session (report of the Secretary-General on human resources management reform: towards a global, dynamic and adaptable workforce for the United Nations (A/71/323). These measures will broaden the career prospects for these categories of ICT staff and will motivate them to make career choices within the Organization; in turn, the Organization will be able to retain competent and qualified ICT staff.

79. Based on the outcomes of the human resources assessment and skills gap analysis, areas requiring intensive training have been identified. Building sustainable in-house capacity to support the enterprise applications (Umoja, Inspira, iNeed, etc.) will require training and certification of ICT professionals. Acquisition of knowledge and new skills by ICT staff would assist in reducing dependency on external contractual resources engaged at the initial development and deployment phases of Umoja. Moving forward, it is considered best practice to maintain in-house capacity of experts for sustainable support and maintenance of the enterprise systems for optimal resource management.

[6] Source: microsoft.com.

C. Baseline for non-peacekeeping and peacekeeping human resources for information and communications technology

80. The quality of the data on human resources has significantly improved with the deployment of Umoja in November 2015, and the baseline for posts and contractual personnel can therefore be established on the basis of the data captured as at May 2016. Those data combine statistics from the enterprise systems (Umoja and Inspira) and from the survey and analysis of human resources conducted by the Department of Field Support for all peacekeeping operations and special political missions.

81. In the first half of 2016, the Secretariat ICT workforce was reduced by 238 personnel, down from 3,387 in the first half of 2015 to 3,149 (1,491 international and national staff and United Nations Volunteers in non-peacekeeping entities, and 1,658 staff and other personnel in peacekeeping entities). In May 2016, there were approximately 1,284 contractors in peacekeeping operations, representing 43.6 per cent of the total ICT workforce, and 212 in non-peacekeeping operations, representing 12.4 per cent of the non-peacekeeping ICT workforce. The total number of the workforce including contractors increased from 4,598 in 2015, to 4,645 in 2016.

D. Information and communications technology workforce analysis in non-peacekeeping offices

82. The distribution of posts by level indicates that 33.8 per cent of ICT staff in non-peacekeeping ICT entities are performing the functions of middle level managers, junior Professional staff represent 7.6 per cent of the total workforce, and senior level managers represent 5.3 per cent. General Service and other categories of staff comprise a total of 53.3 per cent. Without creating further career opportunities for middle level managers, who presently constitute the majority of the ICT workforce at the P-4 and P-3 levels, further professional growth of staff is limited and staff moving out of the ITC job family during the mobility exercise is a serious risk.

83. While the Organization continues to maintain a ratio of 14.2 per cent for contractual resources, or 212 contractors to 1,491 staff, there continues to be a further transition from staff augmentation arrangements to performance-based service providers who have the capacity to provide ICT services at a lower cost as a result of a competitive bidding process. The distribution of the contractual workforce across various categories of service providers comprises 60 per cent of personnel (128) from third-party commercial vendors and 40 per cent of personnel (84) from the United Nations Office for Project Services (UNOPS). Figure VI presents a breakdown of the expertise of contractors in various technical areas.

Figure VI
Contractors in the United Nations information and communications technology workforce, by area of expertise
(Number of contractors and percentage)

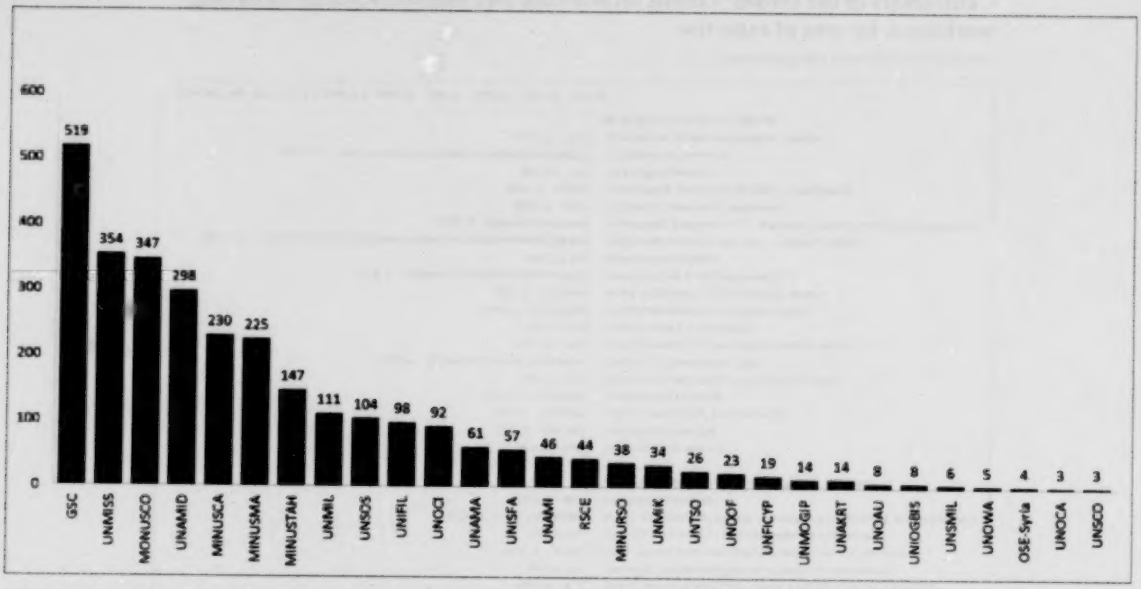
0.0% 2.0% 4.0% 6.0% 8.0% 10.0% 12.0% 14.0% 16.0%
THIRD PARTY/VENDOR
Asset Management Assistant 0.9%
Business Analyst 10.4%
Citrix Engineer 1 0.5%
Database Administrator Engineer 1.4%
Desktop Support Analyst 0.9%
Enterprise Application Analyst & Network Security 4.2%
Field Support & Telephone Analyst 13.7%
IDM Consultant 1 0.5%
IT Management & Support 7.5%
Lead Supervisor Logistics Unit 1.9%
Linux System Administrator 2.4%
Logistics Technician 1 0.5%
Lotus Notes Application Developer 0.9%
SAP Business Analyst 6.6%
Senior Desktop Support Analyst 0.9%
Siebel Specialist 2.4%
SUN IDMS Administrator 1.9%
System Analyst 1.9%
Technical Writer 0.9%
UN ICT SERVICE PROVIDERS - UNOPS
Admin Support 0.9%
Application architects/system analysts/developers 3.8%
Associate Information Systems Office 1 0.5%
Associate PeopleSoft System Develop. and... 1.4%
Business Process Reengineering Expert 1 0.5%
CITRIX Mobile Office and UMOJA access layer 0.9%
Data Centre Consolidation & Operations 1.4%
Database support and administration 1.9%
DB Senior Technician 1 0.5%
Desktop management/Applications Software 1 0.5%
Enterprise content management programming... 3.8%
HR ERP Support & Business Analysis 1.4%
Information Architect/Business Specialist 1 0.5%
Information Security Compliance Manager 1 0.5%
Information Systems Officer 2.4%
Other contractors 8.0%
Physical Security Support 1.4%
Project Management 2.4%
SAP SDM Analyst 1 0.5%
System Support Assistant 1 0.5%
USD HUB Manager 1 0.5%
USD Information Systems Assistant 1.9%
Web development & Hosting support and Admin. 3.8%
0 5 10 15 20 25 30 35

Abbreviations: DB, Database; DBA, Databases Administrator; HR ERP, Human Resources Enterprise Resource Planning; IDM, Information and Data Management; SDM, Service Delivery Management; SUN IDMS, SUN Integrated Database Management System; and USD, Unite Service Desk.

E. Information and communications technology workforce analysis for peacekeeping operations

84. Owing to the unpredictable nature of field missions, the ICT workforce model of the Department of Field Support is heavily dependent on contractors, who account for 43.6 per cent (1,284) of the overall workforce of 2,942 individuals in the ICT workforce in the field (see figure VII). The contractual element of the workforce can be expanded or reduced rapidly as needs dictate and can also complement staffing in missions where specialized ICT skills are difficult to source locally.

Figure VII
Information and communications technology workforce by field mission, as at 30 June 2016



Abbreviations: GSC, Global Service Centre; MINURSO, United Nations Mission for the Referendum in Western Sahara; MINUSCA, United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic; MINUSMA, United Nations Multidimensional Integrated Stabilization Mission in Mali; MINUSTAH, United Nations Stabilization Mission in Haiti; MONUSCO, United Nations Organization Stabilization Mission in the Democratic Republic of the Congo; OSE-Syria, Office of the Joint Special Envoy of the United Nations and the League of Arab States to Syria; RSCE, Regional Service Centre in Entebbe, Uganda; UNAKRT, United Nations Assistance to the Khmer Rouge Trials; UNAMA, United Nations Assistance Mission in Afghanistan; UNAMI, United Nations Assistance Mission for Iraq; UNAMID, African Union-United Nations Hybrid Operation in Darfur; UNDOF, United Nations Disengagement Observer Force; UNFICYP, United Nations Peacekeeping Force in Cyprus; UNIFIL, United Nations Interim Force in Lebanon; UNIOGBIS, United Nations Integrated Peacebuilding Office in Guinea-Bissau; UNISFA, United Nations Interim Force for Abyei; UNMIK, United Nations Interim Administration Mission in Kosovo; UNMIL, United Nations Mission in Liberia; UNMISS, United Nations Mission in South Sudan; UNMOGIP, United Nations Military Observer Group in India and Pakistan; UNOAU, United Nations Office to the African Union; UNOCA, United Nations Regional Office for Central Africa; UNOCI, United Nations Operation in Côte d'Ivoire; UNOWA, United Nations Office for West Africa; UNSCO, Office of the United Nations Special Coordinator for the Middle East Peace Process; UNSMIL, United Nations Support Mission in Libya; UNSOS, United Nations Support Office in Somalia; and UNTSO, United Nations Truce Supervision Organization.

85. The provision of essential support for field mission operations is the foundation upon which the Department of Field Support builds its additional support services. Along with the provision of food, fuel and water, the ability to communicate with all components, particularly in crisis situations, is essential for accomplishing the core strategic, operational and tactical mandates of field missions. These operations are often conducted in countries where local telecommunications infrastructure is non-existent or has been seriously compromised.

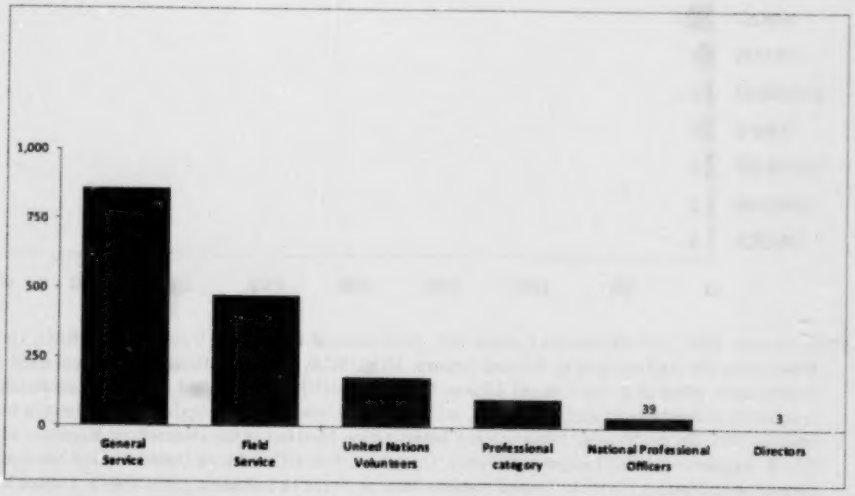
86. The ICT workforce in the field is structured to ensure that, in times of crisis, a core of skilled technical staff is available on the ground at all mission locations to maintain the independent ICT networks delivering communications services,

including emergency services. Experience has shown that, in many cases, national staff may not be available when conflicts erupt in their countries. The balance between technical ICT national General Service and international Field Service staff is therefore important.

87. Rest and recuperation in hardship duty stations and leave cycles also need to be considered. National staff account for 54 per cent of the total of United Nations ICT staff in the field, international staff represent 35 per cent and United Nations Volunteers make up the balance of 11 per cent. It is important to maintain this composition, since over 75 per cent of personnel supported by the Department of Field Support work in the 40 countries at the bottom of the World Bank "ease of doing business" index.[7]

88. ICT staff in the field is composed of 52 per cent (860) in the General Service category, 29 per cent (473) in the Field Service category, 11 per cent (178) as United Nations Volunteers, 6 per cent (105) in the Professional category, 2 per cent (39) who are National Professional Officers, and less than 1 per cent (3) at the Director level (figure VIII).

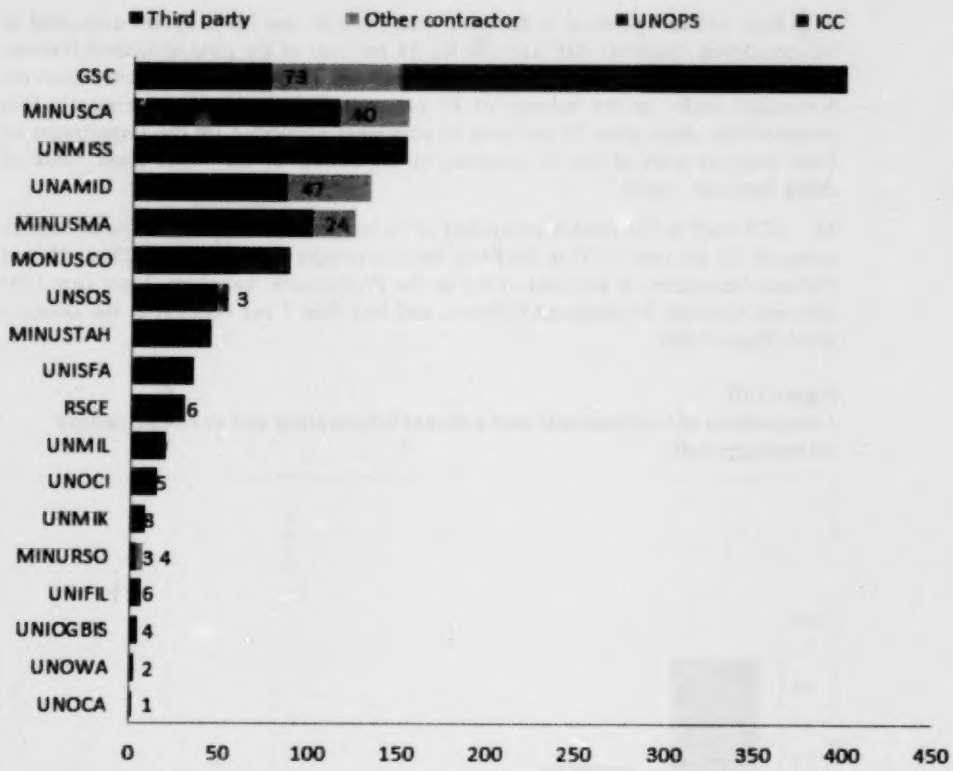
Figure VIII
Composition of international and national information and communications technology staff



89. Of the 1,284 contractors in the field, 63 per cent are from commercial vendors and United Nations service providers, 15 per cent are local contractors, 13 per cent are provided by UNOPS and 9 per cent are from the International Computing Centre. Details are outlined in figure IX.

[7] World Bank, *Doing Business 2015: Going Beyond Efficiency*, Washington, D.C., 2014.

Figure IX
Composition of contractual service providers, by mission

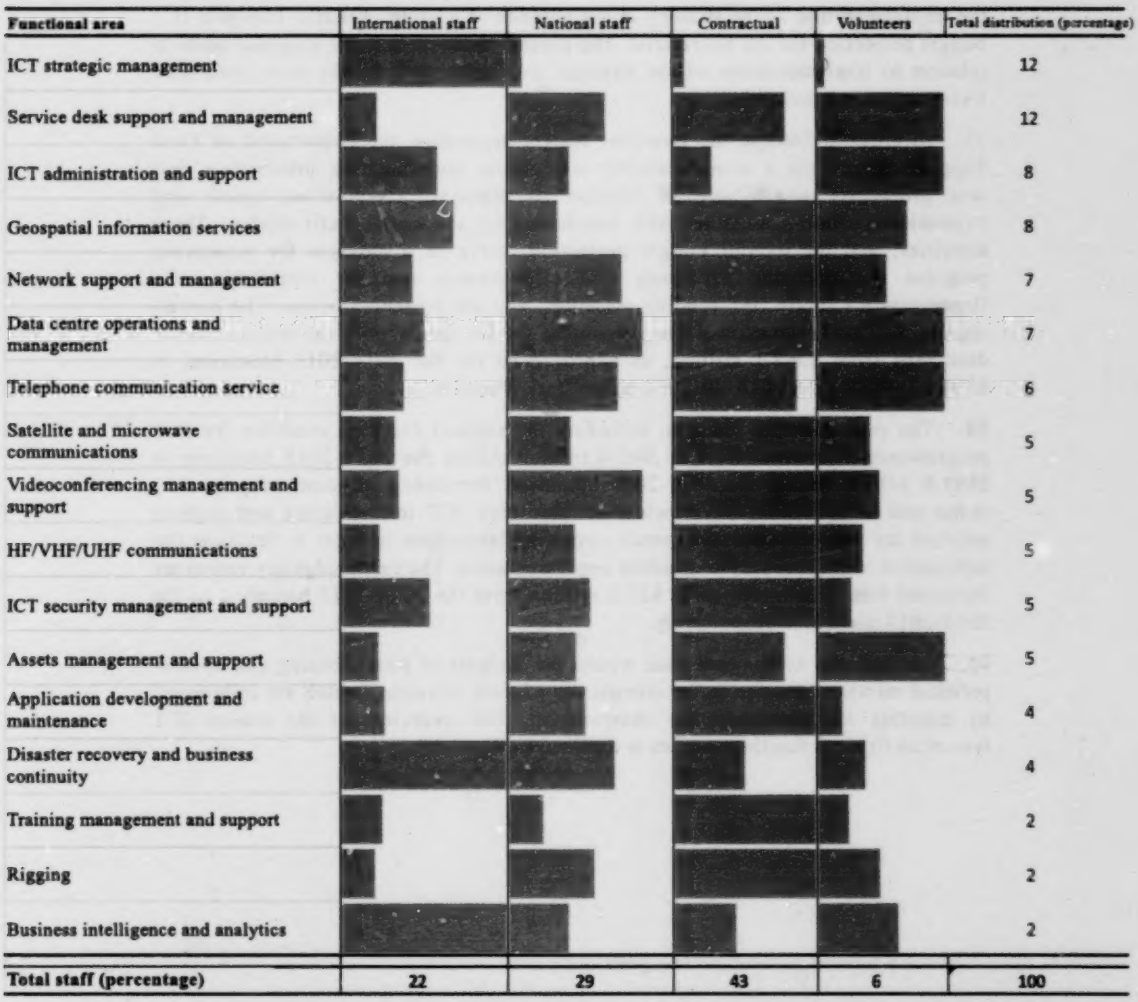


Abbreviations: GSC, Global Service Centre; ICC, International Computing Centre; MINURSO, United Nations Mission for the Referendum in Western Sahara; MINUSCA, United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic; MINUSMA, United Nations Multidimensional Integrated Stabilization Mission in Mali; MINUSTAH, United Nations Stabilization Mission in Haiti; MONUSCO, United Nations Organization Stabilization Mission in the Democratic Republic of the Congo; RSCE, Regional Service Centre in Entebbe, Uganda; UNAMID, African Union-United Nations Hybrid Operation in Darfur; UNIFIL, United Nations Interim Force in Lebanon; UNIOGBIS, United Nations Integrated Peacebuilding Office in Guinea-Bissau; UNISFA, United Nations Interim Force for Abyei; UNMIK, United Nations Interim Administration Mission in Kosovo; UNMIL, United Nations Mission in Liberia; UNMISS, United Nations Mission in South Sudan; UNOCA, United Nations Regional Office for Central Africa; UNOCI, United Nations Operation in Côte d'Ivoire; UNOPS, United Nations Office for Project Services; UNOWA, United Nations Office for West Africa; and UNSOS, United Nations Support Office in Somalia.

90. The present distribution of the ICT workload, as represented in figure X, is based on findings from a recent survey and analysis of ICT personnel and authorized levels of human resources conducted by the Department of Field Support

of all peacekeeping and special political missions. This provides an estimation of the time spent on each function, as determined by the operational requirements of missions. Operational requirements are driven by the nature of the field mission mandates, geographical location and the disparate nature of the various locations within each field mission that require dedicated ICT functions performed on site.

Figure X
Distribution of workload of information and communications technology personnel, by staff category and functional area



Functional area	International staff	National staff	Contractual	Volunteers	Total distribution (percentage)
ICT strategic management					12
Service desk support and management					12
ICT administration and support					8
Geospatial information services					8
Network support and management					7
Data centre operations and management					7
Telephone communication service					6
Satellite and microwave communications					5
Videoconferencing management and support					5
HF/VHF/UHF communications					5
ICT security management and support					5
Assets management and support					5
Application development and maintenance					4
Disaster recovery and business continuity					4
Training management and support					2
Rigging					2
Business intelligence and analytics					2
Total staff (percentage)	**22**	**29**	**43**	**6**	**100**

91. The survey findings show that international staff are focused on ICT strategic management, geospatial information services, business intelligence, disaster recovery and business continuity, national staff are represented strongly across both

technical and administrative areas, and contractual personnel are represented strongly in project-related services and technical areas such as videoconferencing, data centre support and monitoring services.

VII. Budget projection

A. Comprehensive assessment: five-year budget projection

92. In its resolution 69/262, the General Assembly expressed concerns relating to the implementation of the strategy in the absence of a comprehensive five-year ICT budget projection for the Secretariat. The present report details the progress made in relation to implementation of the strategy, as underscored by the now completed five-year budget projection.

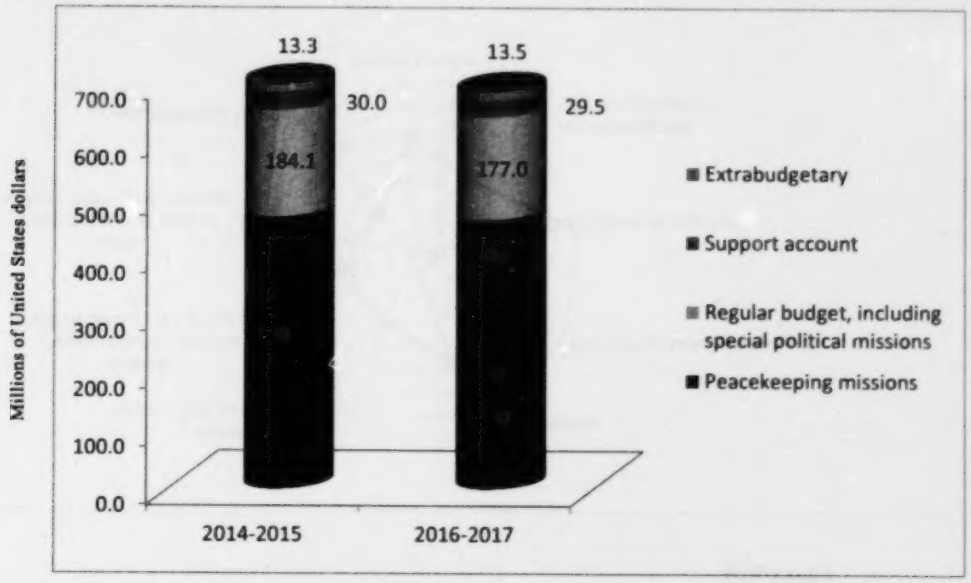
93. In order to finalize the five-year budget projection, the Department of Field Support carried out a comprehensive assessment, encapsulating information that was previously unavailable in relation to planning assumptions, assets and expenditure patterns, together with benchmarking and cost-benefit studies. These activities, and the overall budget projection, serve as a baseline for measuring progress in improving efficiency and effectiveness and for establishing the Organization's future ICT funding priorities, and are presented below. The overall regular budget resources, including resources for the special political missions, have decreased from $368.1 million, as appropriated for the 2014-2015 biennium, to $354 million for the 2016-2017 biennium[8] (see annex I).

94. The peacekeeping budgets, including the support account, available for ICT programmes, decreased from $1,002.4 million during the 2014-2015 biennium to $991.8 million during the 2015-2016 biennium. Inevitably, missions vary in size, scope and composition; nevertheless reliable core ICT infrastructure and support services are required across disparate operating landscapes in order to facilitate the substantive work and enable mandate implementation. The extrabudgetary resources increased from $26.6 million to $27.0 million from the 2014-2015 biennium to the 2016-2017 biennium, respectively.

95. Fluctuations in cost per user within the budgets of peacekeeping and special political missions are due to the complexity of field missions, which are influenced by mandate and the operating environment. The overview of the annual ICT resources from all funding sources is outlined in figure XI.

[8] Estimates are now based on the costing of all posts within the ICT network as reflected in Umoja (see para. 10 of the present report).

Figure XI
Overview of annual resources for information and communications technology, by source of funding



96. The Secretariat evaluated the resources necessary to take forward ICT programmes and activities mandated by the General Assembly and is determining the optimal level of resources required during the 2018-2019 biennium, taking into account cost optimization initiatives. The resources allocated to ICT from the 2014-2015 programme budget averaged 5 per cent of the overall appropriations. The budget for 2016-2017 will be implemented with ICT spending averaging 5.42 per cent of regular budget resources.

97. The 2016-2017 approved budget assumes spending per user at an average of $17,587, compared with $18,069 in the 2014-2015 biennium. The average industry spending in 2015 was $21,398, with 75 per cent of Governments allocating ICT resources in the amount of $30,206 per employee. For illustrative purposes, figure XII is presented to show ICT spending as a percentage of overall budgets compared with industry spending, and figure XIII shows ICT spending per employee for overall budgets compared with industry spending.

Figure XII
Spending on information and communications technology as a percentage of overall budgets compared with industry spending

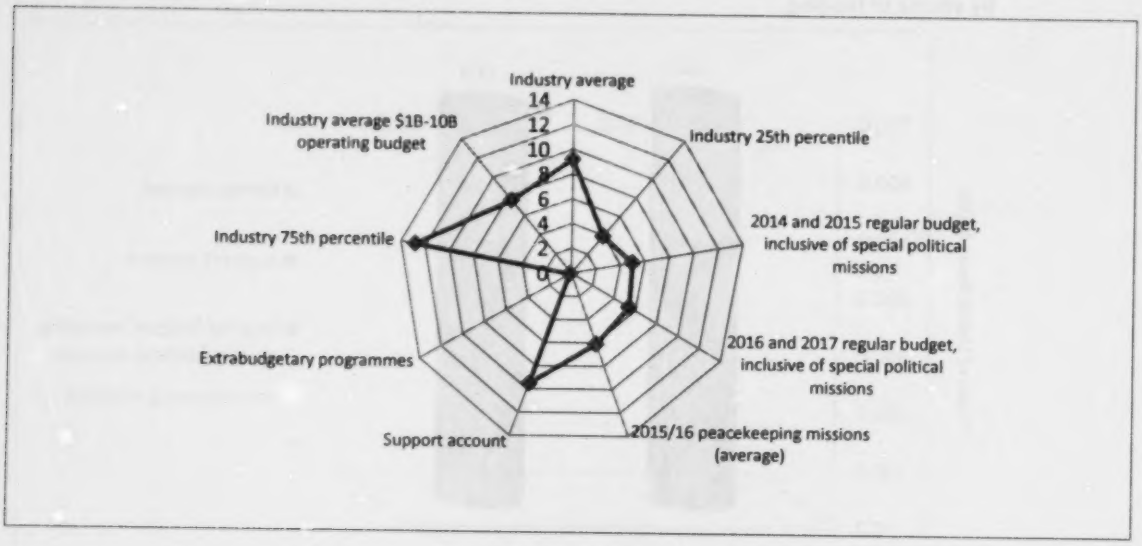
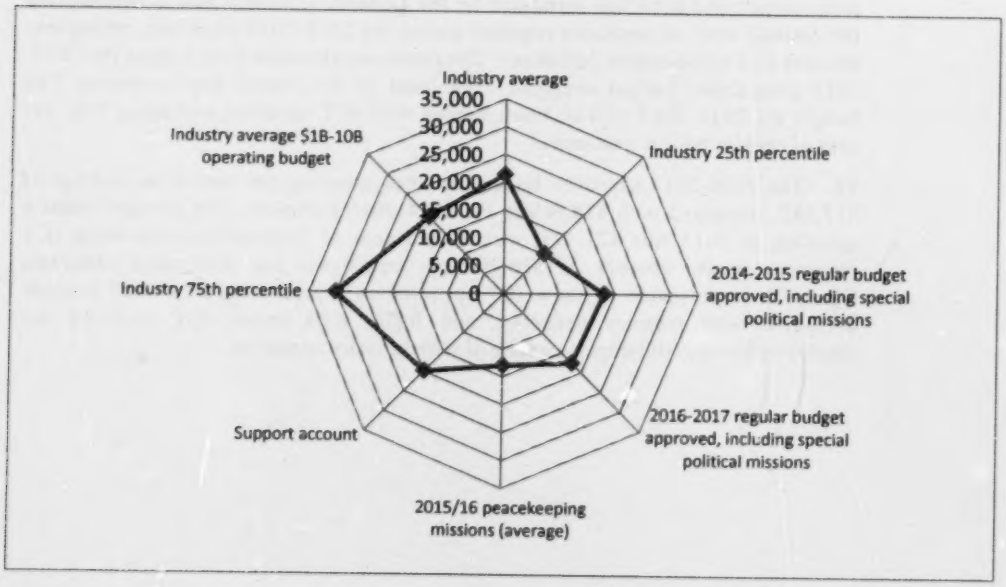


Figure XIII
Spending on information and communications technology per employee in overall budgets compared with industry spending



98. Annex I provides an overview of ICT resources for the bienniums 2014-2015 and 2016-2017, including resources for Umoja. The Organization allocated 6.01 per cent of its resources to ICT programmes and activities during the 2016-2017 biennium, with broad differences across various sources of funding.[9] For comparison purposes, it is noted that the industry average ICT spending as a percentage of operating costs was approximately 9.2 per cent in 2015.[10]

99. The distribution of ICT resources in peacekeeping missions, by type, has remained consistent over the past three fiscal periods: post resources account for approximately 30 per cent, non-post resources are distributed across equipment at 32 per cent, and 38 per cent goes to services, commercial communications and software-related costs. Field missions encompass a wide array of ICT services, with a diversified portfolio (e.g. radio and broadcasting systems, force protection and camp protection systems, satellite and microwave systems, radars, geospatial information systems, power generation, etc.). These ICT services, equipment and networks are used by a myriad of user groups (combinations of civilian and uniformed personnel), who have different requirements to carry out their operational and tactical mandates. The calculation for ICT cost per user for field missions is not therefore uniform and cannot necessarily be compared against government or industry-based averages.

100. The percentage of ICT expenditure per user varies by mission, averaging 6.12 per cent per peacekeeping year. However, the average ICT cost per user for peacekeeping is not consistent across missions and does not therefore provide a true reflection, because of operational variables. Actual mission-specific values can therefore be used to perform trend analysis for benchmarking purposes. For instance, in UNSOS, based on Security Council resolution 2245 (2015), support and equipment is provided across a range of ICT disciplines to over 21,000 African Union Mission in Somalia, United Nations Assistance Mission in Somalia, Somali National Army and Somali police forces and over 1,000 civilians; as such, the cost of ICT per user is $2,184 for the services provided by the Department of Field Support. In UNMIK, where no troops are supported, the cost per user is $13,084 for over 300 civilian personnel; UNDOF, which supports fewer than 1,000 troops and over 150 civilian users, has a cost of $5,384; and MONUSCO, which has over 18,000 troops and over 4,000 civilian users, has a cost of $2,799. This is illustrative of the economies of scale achieved as the number of users increases in specific mission structures and mandates.

B. Planning assumptions and benchmarking

101. To develop assumptions for the future ICT requirements of peacekeeping operations and special political missions, the Office of Information and Communications Technology undertook a thorough planning process with the Department of Field Support. The five-year planning assumptions were developed with the intention of avoiding a two-track approach for the development of the strategy (one for ICT in peacekeeping and one for ICT in the remaining Secretariat

[9] Excludes extrabudgetary resources; if extrabudgetary resources are taken into account, only 3.41 per cent of total resources are allocated to ICT.

[10] Gartner key metrics.

entities), as specifically highlighted by the General Assembly (resolution 69/262) and by the Advisory Committee on Administrative and Budgetary Questions (A/70/7/Add.18, para. 47).

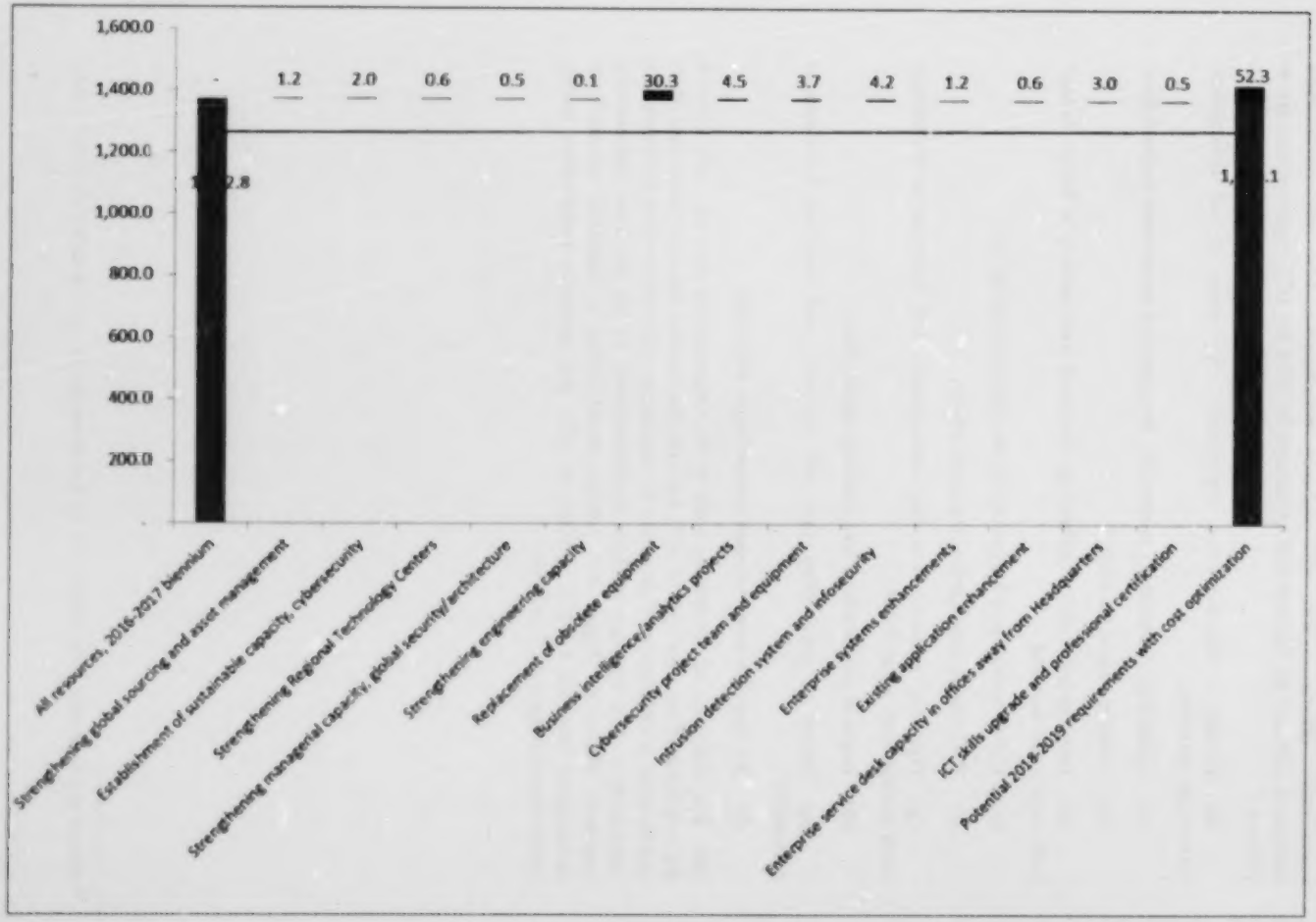
102. The budget proposals for peacekeeping missions are prepared one year in advance of actual implementation, and budgets are prepared on the assumption that the situation on the ground will remain the same. Overexpenditures and underexpenditures can be attributable to mandate changes, unanticipated events, naturally occurring incidents and changes in the security situation as a result of which planned activities cannot be carried out, or because missions reprioritize activities based on operational imperatives. In the 2014/15 peacekeeping budgetary year, there was an underexpenditure that amounted to 1 per cent across all missions. In recent years, investments have been made in upgrading the satellite network infrastructure to increase bandwidth availability to support the implementation of Umoja (A/68/731).

103. The 2018-2019 planning assumptions are focused on priority areas and ongoing projects (as identified in document A/69/517), which require a sustainable level of resources, offset by cost optimization efforts and initiatives as determined against industry benchmarks (see figure XIV). In addition, the key issues that the Organization is facing in the areas of infrastructure and operations will be driving investment proposals beyond the 2018-2019 biennium.

Figure XIV

Resource impact of the information and communications technology strategy

(Millions of United States dollars)



104. The assessment of future requirements takes into account risks identified by ICT offices, on the basis of the most recent risk assessment. In order to offset the estimated increase in ICT requirements, ICT offices were requested to identify cost optimization efforts in line with industry benchmarks. The cost optimization initiatives outlined by Gartner and Associates in 2016 for ICT organizations are as follows:[11]

(a) Create a shared-service organization for some or all information technology services;

(b) Centralize, consolidate, modernize, integrate and standardize technologies;

(c) Leverage cloud services;

(d) Increase information technology financial transparency to better manage both supply and demand;

(e) Utilize zero-based budgeting on the right cost categories;

(f) Rationalize and standardize applications;

(g) Optimize software licensing management and information technology asset management capabilities;

(h) Improve procurement and sourcing capabilities;

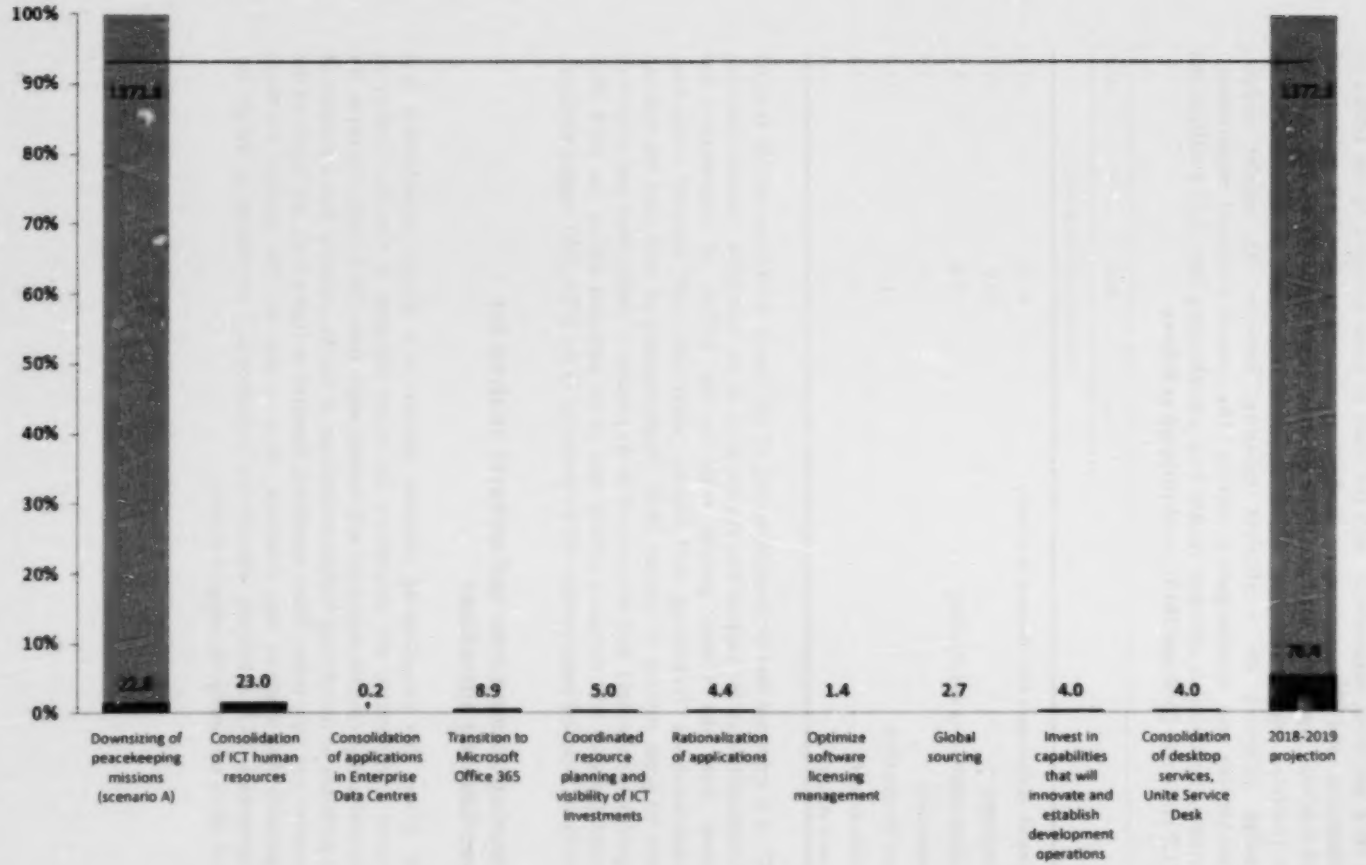
(i) Invest in capabilities that will innovate and establish development operations;

(j) Re-examine how end-user computing is delivered.

105. The challenge of optimizing costs in the Organization does not only concern the reduction of the unit cost of ICT, but also the balance between lower unit costs and flexible prioritization of demands for maximum value of services to clients and stakeholders. The strategy enables implementation of all the cost optimization measures shown in figure XV, which would allow a balanced approach to investments required by ICT entities to offer and maintain sustainable, client-oriented and modern ICT services.

[11] Gartner and Associates, "The Gartner Top 10 Recommended IT Cost Optimisation Ideas", 2016.

Figure XV
Cost optimization and downsizing of peacekeeping missions
(Millions of United States dollars)



106. The annual Umoja maintenance costs are estimated at $48.3 and $46.3 million in 2018 and 2019, respectively, with the share of costs managed by the Office of Information and Communications Technology amounting to $34.9 million and $34.4 million during the 2018 and 2019 financial years, respectively. Financing of the projected requirements are subject to distribution across multiple sources of funding following the established modality, between the regular budget, peacekeeping and extrabudgetary sources. The overall estimated requirements, including maintenance activities funded from peacekeeping only ($13.4 million and $11.9 million in 2018 and 2019), are distributed as follows:

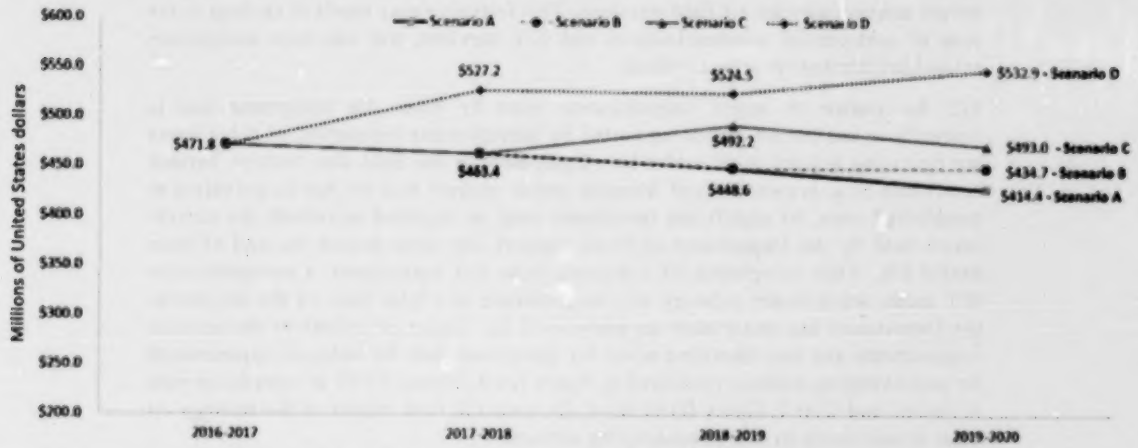
	2018	*2019*
	(Percentage of total funding)	
Licences, maintenance and information security	45.3	42.9
Consultants	22.9	23.9
Business intelligence and reporting	5.4	5.6
Connectivity	6.7	7.0
Unite Service Desk	14.3	15.0
System upgrade	4.1	4.3
System security	1.3	1.3

107. It is expected that the mainstreaming of the Umoja workforce and the transfer of responsibilities for support and maintenance of the enterprise resource planning system from the Umoja project team to the Office of Information and Communications Technology will require sustainable staff capacity comprising about 50 posts starting in January 2020. Mainstreaming of staff with the relevant expertise and the right skill set acquired in the process of deployment and support of Umoja modules will remain a critical task to be managed during the 2018-2019 biennium. Detailed requirements will be presented in the 2020-2021 budget proposal.

C. Planning assumptions and scenario analysis for peacekeeping operations

108. Given that peacekeeping missions operate in a highly unpredictable and reactive environment, the assumption for future planning is that the number of missions and personnel supported will remain static from 2016-2020. However, for the purposes of developing budget projections, it can be assumed that a number of scenarios may take place. These scenarios, depicted in figure XVI, are based on the hypothesis that missions may downsize, close or start-up. The baseline for these projections is $471.3 million, which is the estimated ICT peacekeeping budget for 2016-2017, excluding the support account.

Figure XVI
Budget projections for peacekeeping based on different scenarios, 2016-2020
(Millions of United States dollars)



Note: **Scenario A** assumes that the peacekeeping budget will slowly decline, as one mission will close each fiscal year. In 2017-2018, it can be assumed that a mission similar to the United Nations Operation in Côte d'Ivoire (UNOCI) will close, while a medium-sized mission will close in both 2018-2019 and 2019-2020. **Scenario B** is based on a similar hypothesis, with a mission similar to UNOCI closing in 2017-2018, another medium-sized mission closing in 2018-2019, and no missions closing in 2019-2020. Scenarios C and D factor the start-up of new missions. **Scenario C** makes the same assumption as scenario A, where one mission closes each peacekeeping year, but includes the opening of a new hybrid, medium-sized mission in 2018-2019. **Scenario D** also reflects the closures assumed in scenario A, but assumes that a new mission will require ICT support each peacekeeping year. In this scenario, it is assumed that in 2017-2018 a large mission will require support and in 2018-2019 a small mission and a hybrid, medium-sized mission will require ICT support.

109. Notwithstanding the assumptions described above, the Department of Field Support will continue to partner with the Office of Information and Communications Technology and the broader Secretariat to implement the digital agenda. Support for the implementation of global sourcing, standardization of infrastructure and the transition to cloud computing may result in an increase in investment, which could be offset by the outcomes of cost optimizations. For instance, the initiative to transfer specific services (applications, e-mail, etc.) to the cloud may require an additional investment in commercial communications, but these investments may be offset by the potential savings in the areas of ICT services, contractors and equipment and software-related costs.

110. The requirement for new investments in technologies related to the safety and security of personnel and force protection are based on lessons learned from current pilot projects (e.g. protection of civilians, camp protection systems, police support systems in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic and the United Nations Multidimensional Integrated Stabilization Mission in Mali). It may be expected that this initiative will require an increase in commercial communications, IT services, equipment-related investment and training of ICT staff for successful implementation.

111. The "One United Nations" network is aimed at increasing control over the network environment and providing greater alignment to business priorities. This initiative will establish a revised architectural and governance framework that will simplify the wide-area network design, so as to enable complete, dynamic and secure connectivity for all field missions. This initiative may result in savings in the area of commercial communications and ICT services, but one-time equipment-related investments may be required.

112. In relation to assets, consideration must be made for equipment that is currently in use but no longer supported by manufacturer warranties, as these items are operating beyond their useful life. Equipment in the field also endures harsher conditions (e.g. brownouts and frequent power surges) that are not as prevalent at established sites, so significant investment may be required to refresh the current assets held by the Department of Field Support that have passed the end of their useful life. After completion of a mission-wide risk assessment, a comprehensive ICT assets replacement strategy will be presented at a later date. In the meantime, the Department has undertaken an analysis of the impact of initiatives on resource requirements and has identified areas for investment and for reduced requirements for peacekeeping entities, presented in figure XVII. Figure XVIII is reproduced (see A/70/364 and Corr.1, figure II) to show the potential cost impact of the strategy on asset requirements in non-peacekeeping entities.

Figure XVII

Estimated cost impact of the information and communications strategy on asset requirements of peacekeeping entities (in addition to required asset replacement)

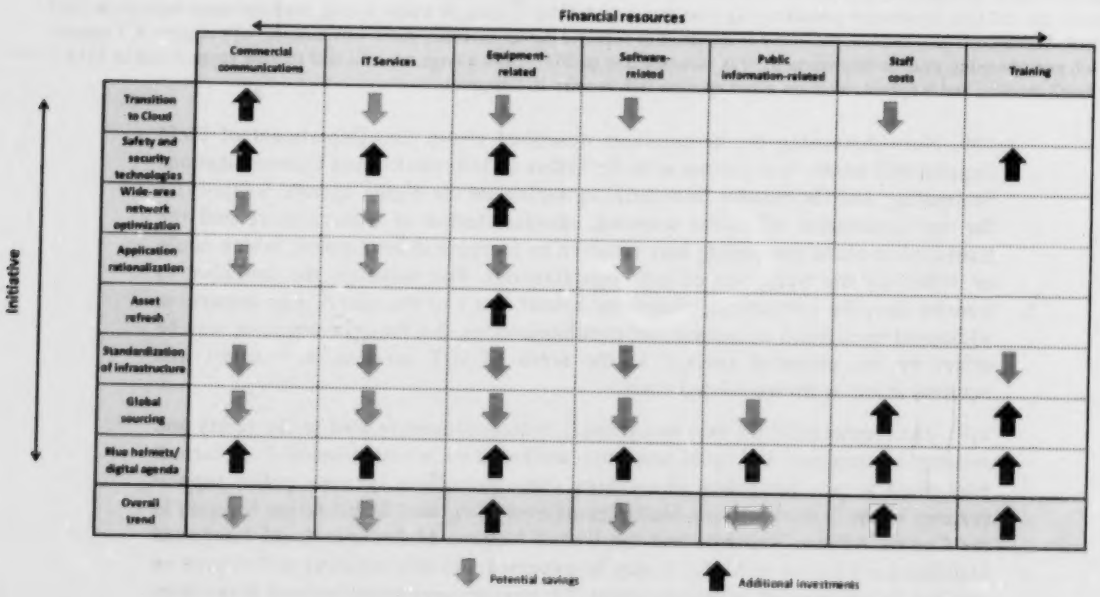
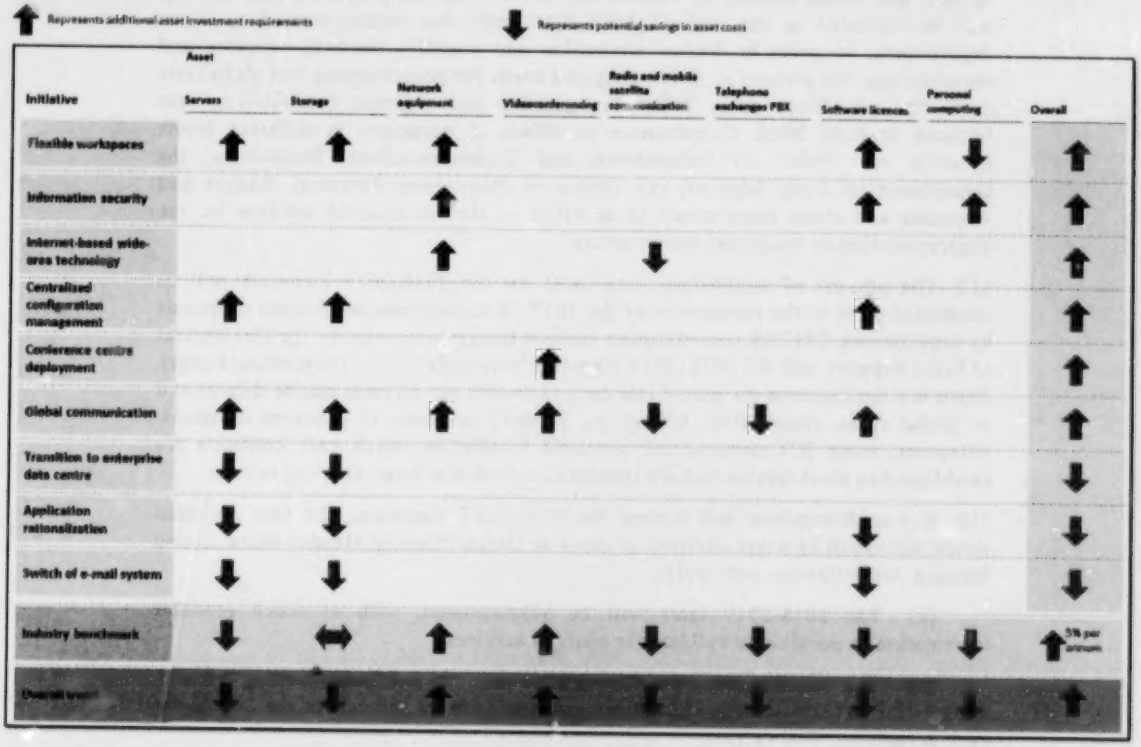


Figure XVIII
Estimated cost impact of the information and communications strategy on asset requirements of the Secretariat, offices away from Headquarters and the regional commissions (in addition to required asset replacement)



Source: IBM assessment, data provided by Gartner and Associates analysts.

D. Cost recovery of resources allocated to client departments

113. ICT activities continue to be funded from resources allocated centrally to offices providing ICT services, as well as resources allocated directly to clients to ensure visibility of ICT costs. Rate cards for ICT services are established by the Office of Information and Communications Technology and the Department of Field Support prior to developing a budget proposal for the subsequent fiscal year. The 2016-2017 set of rates for ICT services was limited to New York and was introduced as part of the rationalization and standardization of ICT services, including a standard cost for enterprise applications such as iNeed, Enterprise Identity Management Services (EIDMS) and Unite Docs. The intention for the 2018-2019 biennium is to develop global rate cards, where feasible, and to create an additional tier for rates in relation to services procured and obtained locally.

114. The 2016-2017 biennium is transitional for the revised rate cards applicable to the United Nations programme budget as determined in 2014. The Office of Information and Communications Technology will be revisiting the 2016-2017 rates to seek to adjust them for actual costs incurred during 2016, and to reflect changes in rates and prices offered by vendors and all ICT service providers. Any savings will be reflected in the revised 2018-2019 rates and communicated to client departments. In order to further streamline and simplify the rate structure and methodology, the process of developing rate cards for peacekeeping and global rate cards for all offices away from Headquarters and regional commissions was initiated in June 2016. Coordination of efforts is necessary at different levels between the Office of Information and Communications Technology, the Department of Field Support, the Office of Programme Planning, Budget and Accounts and client departments in an effort to find an optimal solution for the implementation of the global rate structure.

115. The process of establishing rate cards for the 2018-2019 biennium will be completed prior to the submission of the 2017/18 support account budget proposals by departments, 2017/18 peacekeeping mission budget proposals by the Department of Field Support, and the 2018-2019 biennium proposals for the programme budget. There is a limitation to the global rate card approach; not all rates can be determined as global rates, since prices offered by vendors can vary in different locations. Moreover, some ICT services are procured locally, in which case contracts are established as local service and are limited to a particular peacekeeping mission.

116. It was determined that during the 2016-2017 biennium, the rate revisions would not result in a net addition to costs at United Nations Headquarters. Going forward, the following will apply:

(a) The 2018-2019 rates will be substantiated, with as much granular information as possible to validate the costs of services;

(b) The rate revisions for the support account and peacekeeping mission budgets for 2017/18 will be presented separately with an analysis of the impact for each department and mission;

(c) Rates for all Secretariat locations will be rationalized;

(d) Bundling of services and the underlying cost elements for the rate structures will be harmonized to the extent possible.

117. The Office of Information and Communications Technology will work with various departments in order to determine the optimal rate cards for non-mandatory services. It is anticipated that ongoing consolidation will lead to efficiencies across the Secretariat. The outcome of this exercise will be reflected in the 2018-2019 programme budget and 2017/18 peacekeeping budget proposals.

E. Impact of information and communications technology on Organization-wide support costs

118. The consideration of ICT as a lever to assist in the balancing of the Organization's substantive and support costs is compelling. As indicated in the present report, the cost of ICT at the United Nations is lower than standard industry

benchmarks, but the focus in terms of the aggregate is not how much is spent on ICT as a percentage of operating costs or per employee, but rather the cost compared with the benefit received from the amount spent. The Office of Information and Communications Technology has made significant efforts to keep ICT costs down by eliminating redundancy and fragmentation of systems; retaining contractors when and where appropriate; and globally sourcing its supply. Activity-based costing will also soon be adopted to achieve greater control of the cost drivers. Mechanisms to complement this endeavour in relation to the Organization's other support costs include:

(a) **Business process re-engineering**. The ongoing implementation of Umoja will increase the ability of the United Nations to take apart business processes and put them together again in new ways, while (as noted above) the ability to use the digital agenda to examine millions of annual United Nations transactions will provide an unparalleled database;

(b) **Logistics**. Using ICT to restructure the overall supply chain of the United Nations while gaining visibility over every step, from manufacture to the Organization's own end use, has enormous potential for lowering support costs. Again, Umoja is the key logistics enabler for this core function;

(c) **Analytics**. As described in the present report, solutions to support functions such as finance, human resources, the supply chain and conference management, as well as ones to support the work of the United Nations in areas from climate to gender parity to political affairs have been provided.

VIII. Conclusion

119. Continued focus on developing and improving ICT at the United Nations is essential so as to ensure that technology contributes efficiently and effectively to the fulfilment of global mandates, and also to ensure that ICT enables the Organization to meet expectations, from secure e-mail and smooth conference servicing, to complex data analysis and cloud computing.

120. The key initiatives under the first phase of the ICT strategy, although not all complete, are well under way: supporting Umoja deployment; strengthening information security; rationalizing applications and developing new, innovative solutions; establishing a single network; delivering the regional framework and holistic monitoring; improving arrangements for hosting, connectivity, global engineering and conferencing; and providing 24/7 support globally. The Organization is well positioned to proceed with the digital agenda, and the second phase of the strategy champions the opportunity to further advance technology at the United Nations.

121. In-depth consideration has been given to the way in which global sourcing and assets could be better managed in the Organization in order to fully optimize ICT resources. It was concluded that enhancement of capacity related to global contracts would allow consolidation of contract management across the Secretariat and provide visibility into ICT contracts available within the United Nations, thus minimizing the need for new procurement actions; a fully developed proposal will be submitted to the General Assembly in due course. ICT assets have been fully

assessed and quantified in peacekeeping operations and in non-peacekeeping entities, and work is continuing to improve asset management, reduce risks and control costs in relation to existing capitalized assets and future acquisition of equipment as necessary.

122. Along the same vein, human resources in ICT across the Organization have been carefully analysed and described in the present report; while defragmentation continues, it has also become evident that more needs to be done to retain skilled ICT staff and to promote career progression in ICT functions as the United Nations increasingly depends more on technical expertise.

123. Significant combined efforts of the Office of Information and Communications Technology and the Department of Field Support have resulted in a thorough analysis of the ICT financial landscape, and the present report provides comprehensive data relating to expenditure, planning assumptions and benchmarking to support the updated five-year budget projection. As a result of prudent spending, return on investment in ICT at the United Nations is stronger and optimization of resources within approved budgets will partially offset new requirements in critical areas and allow for prioritization of existing resources. The cost recovery process has been carefully examined and the outcome of the rate cards being developed for the 2018-2019 biennium will be reflected in the 2018-2019 programme budget and the 2017/18 peacekeeping budget proposals.

124. Ongoing progress in implementing the ICT strategy, as detailed in the present report, demonstrates the importance attached to the commitments made in 2014, and the critical leadership and management that has overseen the strategy to date. Implementation of the strategy has not been without its challenges, which are highlighted above, but it has generated numerous successes, even with three years of the five-year lifespan of the strategy still ahead.

IX. Action to be taken by the General Assembly

125. The General Assembly is requested to take note of the status of ongoing implementation of the ICT strategy. The Assembly is also requested to take note of the updated five-year planning assumptions, key investment areas and cost-optimization initiatives.

Annex I

Overview of information and communications technology resources for the bienniums 2014-2015 and 2016-2017, including resources for Umoja

(Millions of United States dollars)

Biennium	*Regular budget including special political missions*[a]	*Extrabudgetary*	*Support account*[b]	*Peacekeeping missions*[b]	*Total*	*Umoja*[c]	*Total including Umoja*	*Annual excluding Umoja*	*Annual including Umoja*
2014-2015	368.1	26.6	59.9	942.5	1 397.1	111.5	1 508.6	698.6	754.3
2016-2017	354.0	27	58.9	932.9	1 372.8	54.3	1 427.1	686.4	713.6
Total ICT resources 2014-2017	**722.1**	**53.6**	**118.8**	**1 875.4**	**2 769.9**	**165.8**	**2 935.7**	–	–
Total budgets for 2016-2017[d]	**6 534.4**	**18 901.0**	**618.4**	**15 239.1**	**41 292.9**	**54.3**	**41 347.2**		
Percentage of ICT resources as part of total budget	**5.42**	**0.14**	**9.52**	**6.12**	**3.32**	**100.00**	**3.45**		

[a] The analysis of staff costs for the 2014-2015 and 2016-2017 bienniums captures posts in the information and communications technology (ICT) job network (media technology, telecommunication technology and information management systems and technology). The analysis of non-post resources comprises non-post commitment items with regard to information technology and communications from the Umoja system.

[b] See A/C.5/68/26, A/C.5/69/24 and A/C.5/70/24. For the bienniums 2014-2015 and 2016-2017, calculations for staff costs with regard to the support account and peacekeeping missions are based on the standard cost applicable for the support account for peacekeeping operations and peacekeeping mission budgets. The count of posts in peacekeeping missions is based on the human resources survey conducted by the Department of Field Support in May 2016 and data extracted from Umoja and Inspira for ICT posts. The count of posts funded from the support account is based on actual authorized posts and general temporary assistance positions in the Office of Information and Communications Technology of the Department of Management, the Information and Communications Technology Division of the Department of Field Support, the Financial Information Operations Service of the Office of Programme Planning, Budget and Accounts and the Human Resources Information Systems Section of the Office of Human Resources Management for the reporting period.

[c] See A/69/385 and Corr.1. The 2014-2015 amount reflects actual expenditure.

[d] See A/C.5/70/24, General Assembly resolution 70/249 A-C, A/70/6 (Introduction), schedule I, and A/70/348 (table 5).

Annex II

Status of projects under the information and communications technology strategy

A. Overview of project status

Number of projects	*Status*
20	Projects reported in first progress report (A/70/364 and Corr.1)
-7	Projects completed and moved to ongoing operations[a]
13	Strategic projects described in second progress report (A/71/400)

[a] Regional Technology Centres; Umoja assessment; information and communications technology benchmarking assessment; human resources workforce planning and five-year indicative budget; Inspira PeopleSoft upgrade; enterprise risk management; and global engineering and conferencing.

B. Modified projects, based on change requests that have been approved or are pending approval by the project management board

Project name	*Description of change*
Enterprise Service Desk/ consolidation	Project completion date changed from 31 December 2016 to 31 March 2017
Regional Technology Centres	Project completion date changed from 31 December 2017 to 31 December 2015. All tasks to establish the Regional Technology Centres have been completed
Global network operations centre	Project divided into phases. Phase one, related to of monitoring New York infrastructure by Enterprise Network Operations Centre in Valencia, Spain, was completed in December 2015. Phase two started in August 2016
Data centre consolidation	Project scope and timeline modified based on benchmarking data and road map for decommissioning applications. Updated schedule is in progress
Global sourcing strategy	Project divided into phases. Phase one completion date changed from 28 October 2015 to 31 May 2016. Phase two is currently in progress
10-point action plan to strengthen information security	Project completion date changed from 31 December 2015 to 31 December 2016

Project name	*Description of change*
Disaster recovery	Project completion date changed from 31 December 2015 to 31 December 2016
Umoja application interfaces	Project completion date changed from 31 December 2015 to 30 September 2016
Information and communications technology policies and procedures	Scope of project modified to include compliance with policies and procedures. Project completion date changed from 30 September 2015 to 31 December 2016
Enterprise business intelligence and analytics	Project completion date changed from 31 December 2015 to 31 December 2016

Note: Change requests are made to adjust timelines of projects, to phase out projects to enable better tracking, or to close projects that have been fast tracked; requests may be made due to e.g. procurement delays, funding issues, increased scope or re-evaluation of schedules.

C. Ongoing projects

Project name	*Description*	*Start date*	*Finish date*	*Percentage complete*	*Key milestones*
Enterprise Service Desk/ consolidation	Establish a 24/7 global support centre for enterprise applications, including Umoja, Inspira, Unite Docs, Unite Connections, iNeed, Earthmed, etc. Consolidate help desks across the Organization	1 January 2015	31 December 2016	70%	Enterprise Service Desk fully resourced and staffed (Completed 30 September 2015) Technology roll out (Completed 30 September 2015) Establish funding model (Completed 31 December 2015) Consolidation of help desks (In progress; finish date 31 December 2016)
Network and infrastructure upgrade (MPLS — multiprotocol label switching) "One United Nations" network	Upgrade the wide-area network to accommodate existing and new enterprise applications	10 May 2013	31 December 2016	89%	Complete cluster 4 connectivity (Completed 30 September 2015) Establish funding model (Completed 31 October 2015) Continue to add Secretariat entities (In progress; finish date 31 December 2016)
Enterprise Network Operations Centre	Establish an enterprise level operations centre that will be globally responsible for detecting changes in state of information technology (IT) assets (event management) and determining the course of action required to return affected IT services to an acceptable level for users as quickly as possible (incident management)	11 May 2015	31 December 2017	35%	Phase one: Monitoring of New York infrastructure by Enterprise Network Operations Centre. (Completed 31 December 2015) Phase two: Consolidation of Enterprise Network Operations Centre and Network Control Centre of the Department of Field Support Information and Communications Technology Division into one enterprise monitoring solution (In progress; finish date 30 June 2017) Phase three: Move monitoring of other Regional Technology Centres to enterprise monitoring (Starts in January 2017; finish date 31 December 2017)

Project name	*Description*	*Start date*	*Finish date*	*Percentage complete*	*Key milestones*
Data centre consolidation	Deploy shared infrastructure services and applications to the enterprise data centres	1 December 2013	31 December 2016	80%	Handover of core operational support activities from Regional Technology Centres to Enterprise Data Centres, i.e. domain name system and directory services support (Complete) Resilient Unite Docs in production (Complete) Resilient Inspira in production (Complete) Develop a project plan with the enterprise applications team to migrate remaining applications to Enterprise Data Centres (finish date 31 December 2016)
Umoja mainstreaming	Transfer responsibilities from the Umoja project to corresponding entities within the Secretariat	1 November 2013	31 December 2018	30%	Infrastructure (In progress; finish date 31 December 2018) Security (In progress; finish date 31 December 2018) Business intelligence (In progress; finish date 31 December 2016) Applications (In progress; finish date 31 December 2018) Deployment coordination (In progress; finish date 31 December 2018) Production support (In progress; finish date 31 December 2018) Administration (project management, contracts, human resources, budget) (In progress; finish date 31 December 2018)

Project name	*Description*	*Start date*	*Finish date*	*Percentage complete*	*Key milestones*
Global sourcing strategy	Take inventory of all information and communications technology (ICT) contracts and assets and identify global sourcing opportunities	1 February 2016	31 March 2017	65%	Phase one: requirements and development of requests for proposals (finish date 31 December 2016)
					Voice and data (Complete)
					Geographic information system (Complete)
					ITC services (In progress)
					Applications (In progress) Phase two: solicitation and contract award for requests for proposals (In progress; finish date 31 March 2017)
10-point action plan to strengthen information security	Strengthen information security across the Secretariat in the areas of prevention, incident detection and response, governance, risk and compliance	1 March 2013	31 December 2016	65%	Initiative one: workstation configuration to ensure compliance with policies and procedures (In progress; finish date 31 December 2016)
					Initiative two: e-mail filtering (Complete)
					Initiative three: mandatory security awareness training (Complete)
					Initiative four: network security — segmentation of network zones (In progress; finish date 31 December 2016)
					Initiative five: intrusion detection (Complete)
					Initiative six: cyberintelligence service/feed (Complete)
					Initiative 7: approve and promulgate pending draft policies (In progress)
					Initiative 8: classify information assets (In progress; finish date 31 December 2016) (In progress)
					Initiative 9: mandate implementation of minimum requirements for public websites (In progress; finish date 31 December 2016)
					Initiative 10: mandatory report of information security incidents (Complete)

Annex III

Information and communications technology assets

A. Overview by class of equipment

(United States dollars)

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
Audiovisual equipment	32 041 037	15 897 966	16 143 071	3 809 159	12 333 912	3 502 045	8 831 866	3 432 043	5 399 824	3 345 878	2 053 945
Communication and communications network equipment	28 613 710	23 139 444	5 474 266	2 165 250	3 309 016	1 490 913	1 818 103	1 132 402	685 702	431 129	254 573
IT computer, IT network and IT storage equipment	68 877 776	52 731 246	16 146 530	7 264 383	8 882 147	5 461 348	3 420 798	2 445 846	974 952	972 899	2 053
IT end-user equipment	12 126 875	10 702 228	1 424 647	676 996	747 651	452 813	294 838	167 804	127 033	50 621	76 412
Total	**141 659 399**	**102 470 884**	**39 188 515**	**13 915 789**	**25 272 726**	**10 907 120**	**14 365 606**	**7 178 096**	**7 187 510**	**4 800 527**	**2 386 983**

B. Overview by office

(United States dollars)

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
ECA	9 051 356	8 065 551	985 805	639 036	346 769	187 941	158 828	110 876	47 952	39 328	8 624
ECE	10 597	10 597	0	0	0	0	0	0	0	0	0
ECLAC	1 447 785	1 087 985	359 800	103 149	256 651	81 478	175 173	70 850	104 323	45 433	58 890
ESCAP	4 748 732	3 785 017	963 715	458 388	505 326	273 210	232 116	101 921	130 195	72 116	58 079
ESCWA	2 322 040	1 856 849	465 191	275 976	189 215	76 862	112 353	76 095	36 259	25 427	10 832
ICTY	7 125 868	5 730 800	1 395 068	595 731	799 337	516 195	283 141	229 286	53 855	44 043	9 812
International Trade Centre	777 287	611 250	166 037	76 776	89 261	55 288	33 972	25 277	8 695	7 506	1 190
IRMCT	5 422 049	2 002 519	3 419 530	1 108 470	2 311 060	1 084 003	1 227 057	729 672	497 385	489 919	7 466

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
United Nations Office at Geneva	19 179 814	14 199 569	4 980 245	1 866 137	3 114 108	1 547 339	1 566 769	1 032 190	534 579	387 053	147 526
United Nations Office at Nairobi	11 896 083	8 773 121	3 122 963	1 163 058	1 959 905	972 369	987 535	746 445	241 091	179 017	62 074
United Nations Office at Vienna	5 788 442	4 509 715	1 278 726	469 390	809 337	382 266	427 071	222 356	204 715	142 982	61 733
UNEP	1 736 456	1 581 704	154 752	70 096	84 655	49 595	35 060	24 268	10 792	11 115	-323
UNFCCC	2 806 456	2 232 563	573 893	274 983	298 909	232 523	66 386	48 030	18 356	18 356	0
UN-HABITAT	776 786	397 584	379 202	106 542	272 660	85 805	186 855	75 325	111 529	40 304	71 225
United Nations Headquarters	62 848 926	42 589 444	20 259 482	6 379 379	13 880 102	5 122 102	8 758 000	3 607 229	5 150 771	3 279 613	1 871 158
UNJSPF	4 341 858	4 104 581	237 277	142 255	95 022	89 857	5 165	5 165	0	0	0
UNODC	1 378 864	932 033	446 831	186 423	260 408	150 284	110 124	73 111	37 012	18 315	18 697
Total	**141 659 399**	**102 470 884**	**39 188 515**	**13 915 789**	**25 272 726**	**10 907 120**	**14 365 606**	**7 178 096**	**7 187 510**	**4 800 527**	**2 386 983**

C. Details by office

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
ECA	**9 051 356**	**8 065 551**	**985 805**	**639 036**	**346 769**	**187 941**	**158 828**	**110 876**	**47 952**	**39 328**	**8 624**
Audiovisual equipment	434 805	405 279	29 526	23 085	6 441	4 890	1 551	1 551	0	0	0
Communication and communications network equipment	8 474 538	7 560 062	914 477	604 351	310 126	172 068	138 058	98 342	39 715	31 091	8 624
IT computer, IT network and IT storage equipment	43 930	2 746	41 184	10 982	30 202	10 982	19 219	10 982	8 237	8 237	0
IT end-user equipment	98 083	97 465	618	618	0	0	0	0	0	0	0
ECE	**10 597**	**10 597**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
IT computer, IT network and IT storage equipment	10 597	10 597	0	0	0	0	0	0	0	0	0

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
ECLAC	**1 447 785**	**1 087 985**	**359 800**	**103 149**	**256 651**	**81 478**	**175 173**	**70 850**	**104 323**	**45 433**	**58 890**
Audiovisual equipment	119 227	102 471	16 755	9 725	7 030	2 479	4 551	1 820	2 731	1 820	910
Communication and communications network equipment	838 095	615 820	222 275	53 898	168 378	40 099	128 279	36 824	91 455	33 475	57 980
IT computer, IT network and IT storage equipment	490 463	369 694	120 769	39 526	81 244	38 900	42 343	32 205	10 138	10 138	0
ESCAP	**4 748 732**	**3 785 017**	**963 715**	**458 388**	**505 326**	**273 210**	**232 116**	**101 921**	**130 195**	**72 116**	**58 079**
Audiovisual equipment	420 759	385 377	35 381	20 336	15 046	15 325	-279	-1 350	1 071	1 071	0
Communication and communications network equipment	1 789 210	1 458 122	331 088	122 314	208 775	39 225	169 550	67 885	101 664	43 586	58 079
IT computer, IT network and IT storage equipment	2 227 612	1 662 634	564 978	298 905	266 074	203 228	62 846	35 386	27 459	27 459	0
IT end-user equipment	311 151	278 884	32 266	16 835	15 432	15 432	0	0	0	0	0
ESCWA	**2 322 040**	**1 856 849**	**465 191**	**275 976**	**189 215**	**76 862**	**112 353**	**76 095**	**36 259**	**25 427**	**10 832**
Communication and communications network equipment	416 761	242 112	174 649	47 907	126 742	45 625	81 117	44 858	36 259	25 427	10 832
IT computer, IT network and IT storage equipment	1 905 279	1 614 737	290 542	228 070	62 473	31 236	31 236	31 236	0	0	0
ICTY	**7 125 868**	**5 730 800**	**1 395 068**	**595 731**	**799 337**	**516 195**	**283 141**	**229 286**	**53 855**	**44 043**	**9 812**
Audiovisual equipment	1 900 823	1 693 138	207 684	81 665	126 019	53 343	72 676	43 560	29 115	22 857	6 258
Communication and communications network equipment	1 764 397	1 608 663	155 734	54 023	101 710	51 199	50 511	38 302	12 209	8 656	3 554
IT computer, IT network and IT storage equipment	3 460 649	2 428 999	1 031 650	460 042	571 608	411 653	159 954	147 424	12 531	12 531	0

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
International Trade Centre	**777 287**	**611 250**	**166 037**	**76 776**	**89 261**	**55 288**	**33 972**	**25 277**	**8 695**	**7 506**	**1 190**
Communication and communications network equipment	62 858	49 427	13 431	4 708	8 723	3 660	5 063	2 149	2 913	1 724	1 190
IT computer, IT network and IT storage equipment	677 639	528 166	149 473	68 935	80 538	51 629	28 909	23 128	5 782	5 782	0
IT end-user equipment	36 790	33 657	3 133	3 133	0	0	0	0	0	0	0
IRMCT	**5 422 049**	**2 002 519**	**3 419 530**	**1 108 470**	**2 311 060**	**1 084 003**	**1 227 057**	**729 672**	**497 385**	**489 919**	**7 466**
Audiovisual equipment	71 634	43 246	28 387	9 247	19 141	7 818	11 323	6 113	5 210	2 482	2 728
Communication and communications network equipment	459 008	416 086	42 923	16 050	26 872	11 005	15 867	5 960	9 907	5 169	4 738
IT computer, IT network and IT storage equipment	4 891 407	1 543 187	3 348 220	1 083 173	2 265 047	1 065 180	1 199 867	717 599	482 269	482 269	0
UN Office at Geneva	**19 179 814**	**14 199 569**	**4 980 245**	**1 866 137**	**3 114 108**	**1 547 339**	**1 566 769**	**1 032 190**	**534 579**	**387 053**	**147 526**
Audiovisual equipment	2 337 956	1 693 694	644 262	165 962	478 300	130 481	347 819	107 212	240 608	88 648	151 960
Communication and communications network equipment	9 211 944	6 517 481	2 694 463	907 557	1 786 906	880 778	906 128	716 923	189 205	195 692	-6 487
IT computer, IT network and IT storage equipment	7 441 155	5 851 996	1 589 159	768 889	820 270	516 100	304 170	202 285	101 885	99 832	2 053
IT end-user equipment	188 759	136 398	52 360	23 729	28 632	19 981	8 651	5 770	2 882	2 882	0
UN Office at Nairobi	**11 896 083**	**8 773 121**	**3 122 963**	**1 163 058**	**1 959 905**	**972 369**	**987 535**	**746 445**	**241 091**	**179 017**	**62 074**
Audiovisual equipment	353 869	178 111	175 759	50 553	125 206	40 853	84 352	34 185	50 168	27 970	22 197
Communication and communications network equipment	1 258 677	979 821	278 856	89 508	189 348	82 908	106 440	35 546	70 894	31 017	39 877
IT computer, IT network and IT storage equipment	5 351 638	2 956 619	2 395 019	859 157	1 535 862	763 298	772 563	652 534	120 029	120 029	0
IT end-user equipment	4 931 898	4 658 570	273 328	163 840	109 489	85 309	24 180	24 180	0	0	0

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
UN Office at Vienna	**5 788 442**	**4 509 715**	**1 278 726**	**469 390**	**809 337**	**382 266**	**427 071**	**222 356**	**204 715**	**142 982**	**61 733**
Audiovisual equipment	30 144	17 943	12 201	4 306	7 895	4 306	3 589	3 589	0	0	0
Communication and communications network equipment	570 997	554 123	16 875	3 214	13 660	3 214	10 446	3 214	7 232	3 214	4 018
IT computer, IT network and IT storage equipment	745 123	230 477	514 646	133 454	381 191	133 454	247 737	133 454	114 283	114 283	0
IT end-user equipment	4 442 177	3 707 172	735 005	328 415	406 590	241 291	165 299	82 099	83 200	25 485	57 715
UNEP	**1 736 456**	**1 581 704**	**154 752**	**70 096**	**84 655**	**49 595**	**35 060**	**24 268**	**10 792**	**11 115**	**-323**
Audiovisual equipment	598 687	534 035	64 652	24 059	40 593	19 324	21 269	12 583	8 686	7 017	1 670
Communication and communications network equipment	244 148	174 691	69 457	28 642	40 815	27 024	13 791	11 685	2 106	4 099	-1 993
IT computer, IT network and IT storage equipment	39 832	39 259	573	573	0	0	0	0	0	0	0
IT end-user equipment	853 789	833 719	20 070	16 822	3 248	3 248	0	0	0	0	0
UNFCCC	**2 806 456**	**2 232 563**	**573 893**	**274 983**	**298 909**	**232 523**	**66 386**	**48 030**	**18 356**	**18 356**	**0**
Communication and communications network equipment	305 340	217 870	87 469	46 226	41 243	38 838	2 406	2 406	0	0	0
IT computer, IT network and IT storage equipment	2 501 116	2 014 693	486 423	228 758	257 666	193 686	63 980	45 624	18 356	18 356	0
UN-Habitat	**776 786**	**397 584**	**379 202**	**106 542**	**272 660**	**85 805**	**186 855**	**75 325**	**111 529**	**40 304**	**71 225**
Audiovisual equipment	75 483	55 777	19 706	4 535	15 171	3 908	11 263	3 464	7 799	3 464	4 335
Communication and communications network equipment	274 233	64 293	209 940	37 088	172 853	37 088	135 765	35 543	100 222	33 332	66 890
IT computer, IT network and IT storage equipment	40 461	17 027	23 435	9 537	13 898	7 949	5 949	5 949	0	0	0
IT end-user equipment	386 609	260 488	126 121	55 382	70 739	36 861	33 877	30 369	3 508	3 508	0

	Original capitalized value	*Accumulated depreciation to 31 December 2015*	*Residual value as at 31 December 2015*	*Depreciation 2016*	*Residual value as at 31 December 2016*	*Depreciation 2017*	*Residual value as at 31 December 2017*	*Depreciation 2018*	*Residual value as at 31 December 2018*	*Depreciation 2019*	*Residual value as at 31 December 2019*
United Nations Headquarters	**62 848 926**	**42 589 444**	**20 259 482**	**6 379 379**	**13 880 102**	**5 122 102**	**8 758 000**	**3 607 229**	**5 150 771**	**3 279 613**	**1 871 158**
Audiovisual equipment	25 697 651	10 788 894	14 908 757	3 415 686	11 493 070	3 219 317	8 273 753	3 219 317	5 054 436	3 190 550	1 863 886
Communication and communications network equipment	2 860 598	2 633 155	227 443	135 341	92 102	46 643	45 459	24 277	21 182	13 910	7 272
IT computer, IT network and IT storage equipment	33 985 667	28 929 917	5 055 750	2 804 819	2 250 931	1 834 463	416 468	351 989	64 478	64 478	0
IT end-user equipment	305 011	237 479	67 532	23 533	43 999	21 679	22 320	11 645	10 675	10 675	0
UNJSPF	**4 341 858**	**4 104 581**	**237 277**	**142 255**	**95 022**	**89 857**	**5 165**	**5 165**	**0**	**0**	**0**
IT computer, IT network and IT storage equipment	4 341 858	4 104 581	237 277	142 255	95 022	89 857	5 165	5 165	0	0	0
UNODC	**1 378 864**	**932 033**	**446 831**	**186 423**	**260 408**	**150 284**	**110 124**	**73 111**	**37 012**	**18 315**	**18 697**
Audiovisual equipment	0	0	0	0	0	0	0	0	0	0	0
Communication and communications network equipment	82 906	47 719	35 187	14 424	20 763	11 539	9 224	8 485	739	739	0
IT computer, IT network and IT storage equipment	723 351	425 920	297 431	127 308	170 122	109 732	60 390	50 885	9 505	9 505	0
IT end-user equipment	572 608	458 395	114 213	44 690	69 523	29 013	40 510	13 741	26 768	8 072	18 697
Total	**141 659 399**	**102 470 884**	**39 188 515**	**13 915 789**	**25 272 726**	**10 907 120**	**14 365 606**	**7 178 096**	**7 187 510**	**4 800 527**	**2 386 983**

Abbreviations: ECA, Economic Commission for Africa; ECE, Economic Commission for Europe; ECLAC, Economic Commission for Latin America and the Caribbean; ESCAP, Economic and Social Commission for Asia and the Pacific; ESCWA, Economic and Social Commission for Western Asia; ICTY, International Tribunal for the Former Yugoslavia; IRMCT, International Residual Mechanism for Criminal Tribunals; UNEP, United Nations Environment Programme; UNFCCC, United Nations Framework Convention on Climate Change; UN-Habitat, United Nations Human Settlements Programme; UNJSPF, United Nations Joint Staff Pension Fund; and UNODC, United Nations Office on Drugs and Crime.